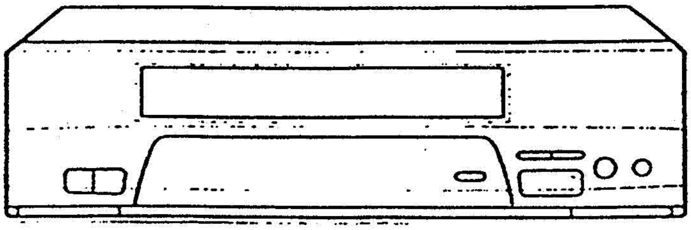
Service Manual

VIDEO CASSETTE RECORDER



VHS
PAL

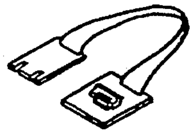
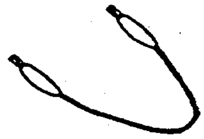
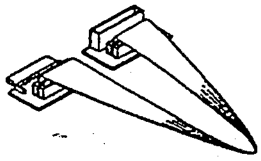
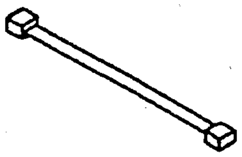
SPECIFICATIONS

Power Source :	AC230V/50Hz
Power Consumption :	Approx. 19W
Operating Temperature :	5°C to 40°C
Television System :	CCIR : 625 lines.50 fields PAL color signal
Video Recording System :	2 rotary heads. helical scanning system Luminance : FM azimuth recording Color signal : PAL recording
Heads:	Video : 2 rotary heads Erase : 1 full track erase head Audio/Control : 1 stationary head

Audio Track :	1 track
Tape Format :	12.65mm high density tape
RF Output Channel :	36 (± 4) channel
Tape Speed:	SP : 23.39mm/s
F.FWD/REW Time :	Approx. 2 minutes 30 seconds (with E-180 Cassette Tape)
Input Level :	VIDEO : 1.0Vp-p. 75 ohm unbalanced AUDIO : 500mV. 50k ohm unbalanced
Output Level :	VIDEO : 1.0Vp-p. 75 ohm unbalanced AUDIO : 500mV. 1k ohm unbalanced
Weight :	3.7 Kg
Dimension :	355(W) × 92(H) × 275.5(D) mm

Design and specification are subject to change without notice.

SERVICING FIXTURES AND TOOLS

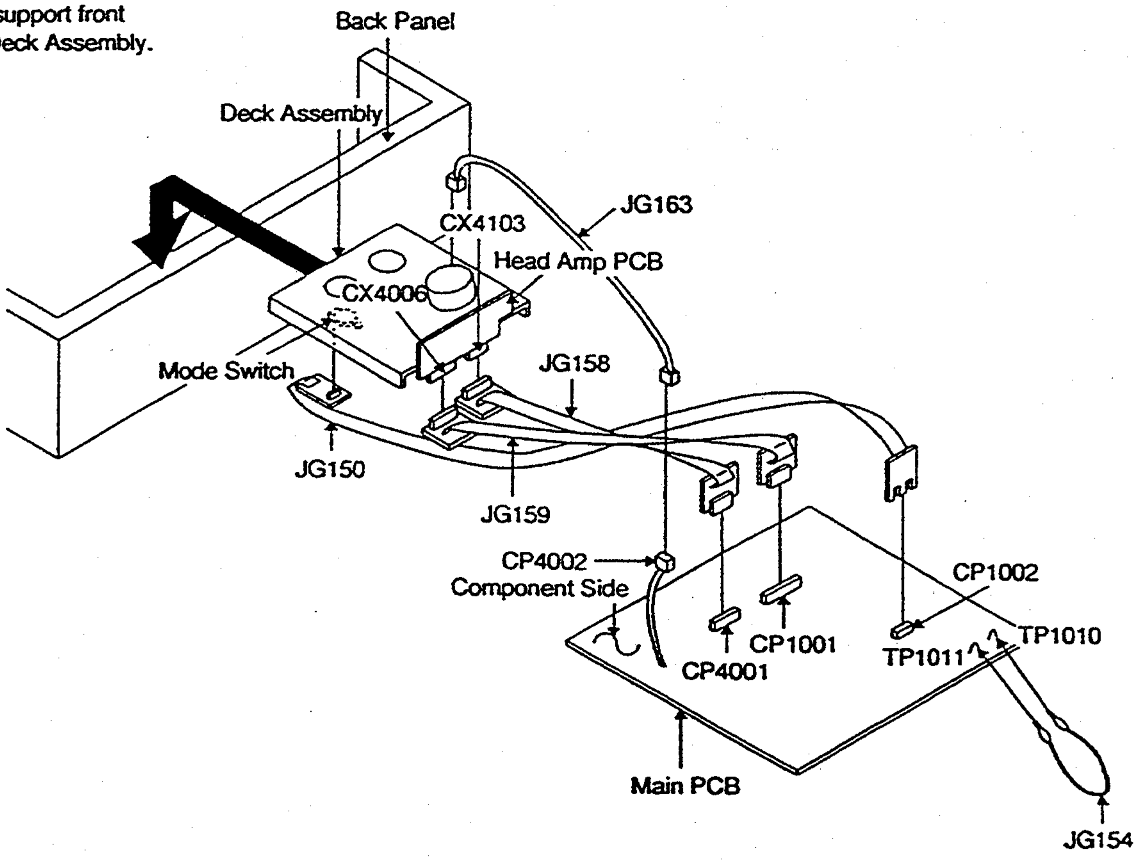
JG150 Cable	JG154 Cable	JG158 Cable (16 Pin) JG159 Cable (20 Pin)	JG163 Cable
			

Part No.	Remarks
JG150	Used to connect the MAIN PCB and MODE SWITCH
JG154	Used to connect the test point of SERVICE and GROUND
JG158/JG159	Used to connect the MAIN PCB and HEAD AMP PCB
JG163	Used to connect the MAIN PCB and FE HEAD

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Remove the Main PCB from the Deck Chassis.
2. Connect as shown in the below figure using the Service Fixture.
   - ○ Connect the Main PCB to the Mode Switch with the cable JG150.
   - ○ Connect the Main PCB to the Head Amp PCB with the cable JG158 and JG159.
   - ○ Connect the Main PCB to the FE Head with the cable JG163.
3. Short circuit between TP1010 and TP1011 with the cable JG154.
   (Refer to MAJOR COMPONENT LOCATION GUIDE)
4. The EOT, BOT and Reel Sensor do not work at this moment.
5. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.



Use Rear edge of Back
Panel to support front
edge of Deck Assembly.

Back Panel
Deck Assembly
CX4103
JG163
Head Amp PCB
CX4006
Mode Switch
JG158
JG150
JG159
CP4002
Component Side
CP1002
CP1001
TP1010
TP1011
CP4001
Main PCB
JG154

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE
   You can find it in the back of your unit.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

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DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the Top Cabinet and Angle Deck Back in the direction of arrow (A).
3. Disconnect the following connector: (CP651 3 pins).
4. Unlock the 2 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 2 screws ③ and remove the Operation PCB.

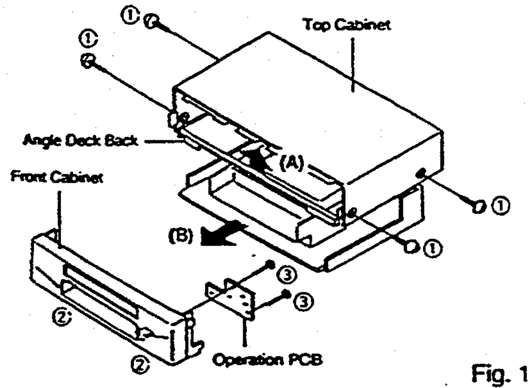

①
①
Top Cabinet
Angle Deck Back
Front Cabinet
(A)
①
(B)
①
③
③
②
②
Operation PCB

Fig. 1-1

1-2: LOCATION OF P.C. BOARDS (Refer to Fig. 1-2)

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

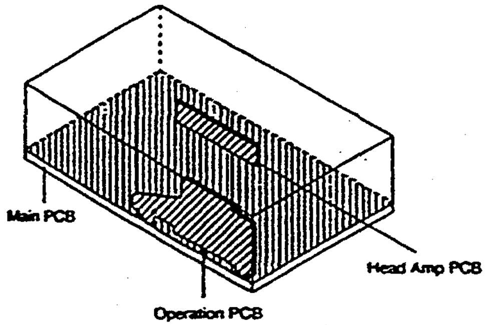

Main PCB
Head Amp PCB
Operation PCB

Fig. 1-2

1-3: BOTTOM CHASSIS (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Unlock the 2 supports ②.
3. Remove the Bottom Chassis in the direction of arrow.

NOTE

AC Cord must be removed from the AC Jack before PCB and Deck Chassis can be removed.

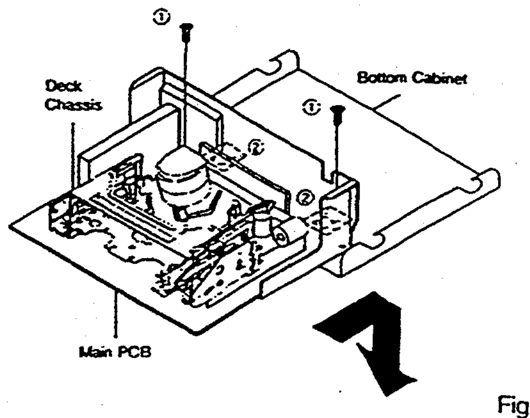

①
Deck Chassis
Bottom Cabinet
①
②
②
Main PCB

Fig. 1-3

1-4: FLAP (Refer to Fig. 1-4)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

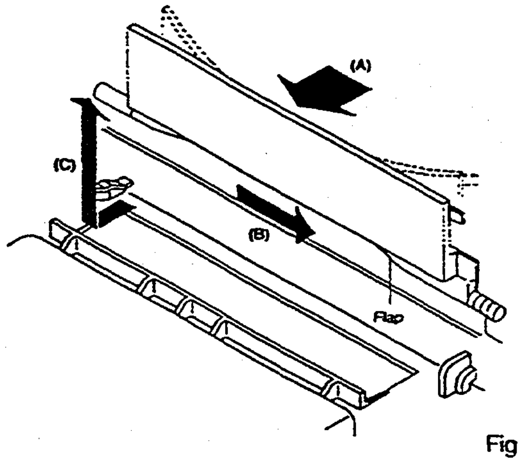


Fig. 1-4

1-5: MAIN PCB (Refer to Fig. 1-5)

1. Remove the 3 screws ①.
2. Remove the screw ②.
3. Disconnect the 2 connectors: (CP1001 20 pins and CP4001 16 pins) and remove the Deck Chassis in the direction of arrow.

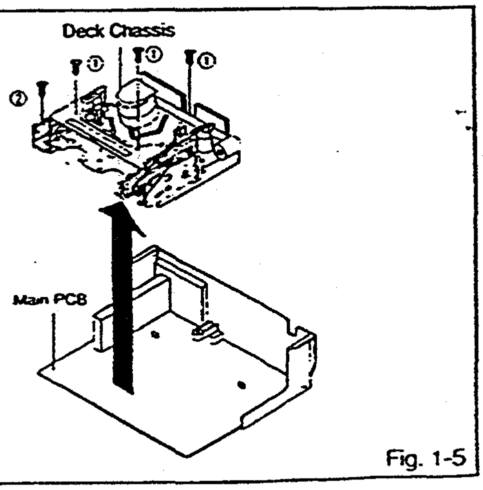

Deck Chassis
①
①
①
②
Main PCB

Fig. 1-5

DISASSEMBLY INSTRUCTIONS

1-6: MAIN PCB AND BACK PANEL (Refer to Fig. 1-6)

1. Remove the 2 screws ①.
2. Remove the Main PCB in the direction of arrow.

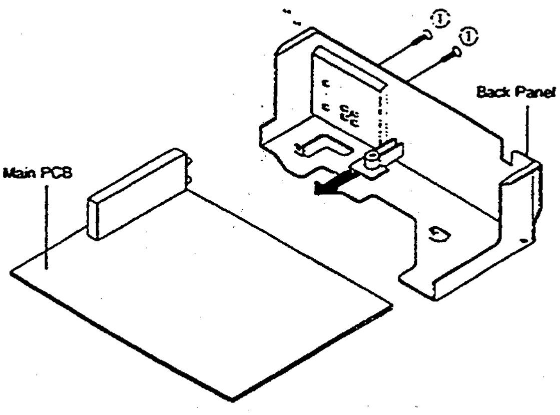

①
①
Back Panel
Main PCB

Fig. 1-6

1-7: CHASSIS SECTION AND UNIT ASS'Y (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove Unit Ass'y in the direction of arrow (A).

NOTE

When installing the Unit Ass'y, align the timing marks and pull the Cassette Holder Ass'y in the direction of arrow (B).

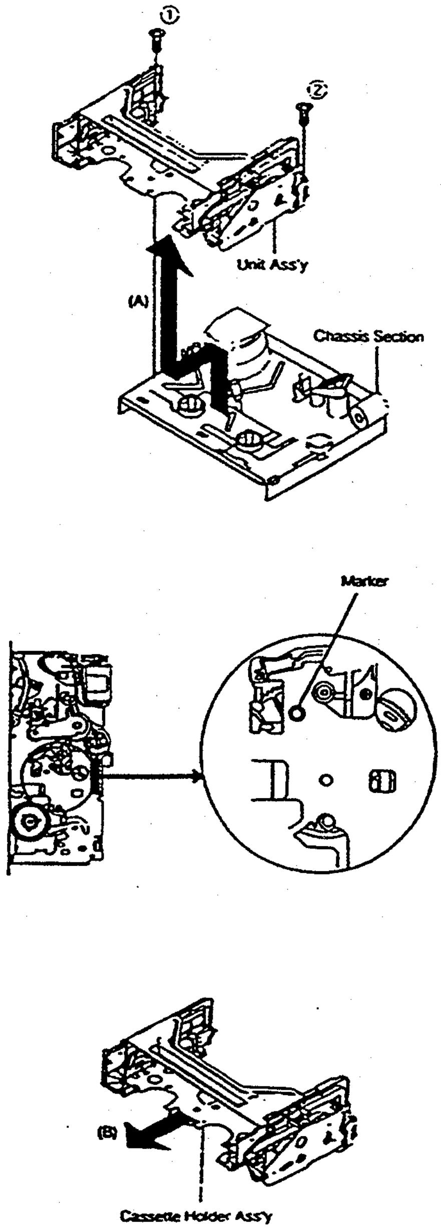

①
②
Unit Ass'y
(A)
Chassis Section
Marker
(B)
Cassette Holder Ass'y

Fig. 1-7

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: LINK GEAR (R) / CLUTCH GEAR (Refer to Fig. 2-1)

1. Unlock the support ①.
2. Remove the BOT Sensor Cover and BOT Reflector.
3. Unlock the 3 supports ②.
4. Remove the Side Bracket R2 and Spring Earth.
5. Remove the Flap Lever, Link Gear (R), Cam Gear Ass'y and BOT Lever.

NOTE

When installing the Link Ass'y and Link Gear (R), align the timing Marks.

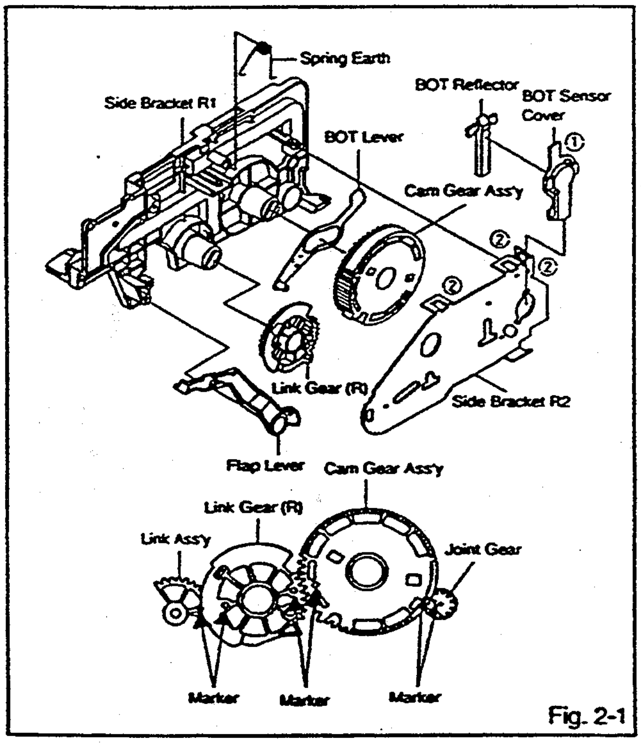

Spring Earth
Side Bracket R1
BOT Reflector
BOT Sensor Cover
BOT Lever
①
Cam Gear Ass'y
②
②
②
Link Gear (R)
Side Bracket R2
Flap Lever
Cam Gear Ass'y
Link Gear (R)
Link Ass'y
Joint Gear
Marker
Marker
Marker

Fig. 2-1

2-2: TOP BRACKET / TAPE PIECE GUIDE (Refer to Fig. 2-2)

1. Unlock the 4 supports ①.
2. Remove the Top Bracket.
3. Remove the Side Bracket R1 and Side Bracket L.
4. Unlock the support ②.
5. Remove the Joint Gear.
6. Remove the Bracket R Spring.

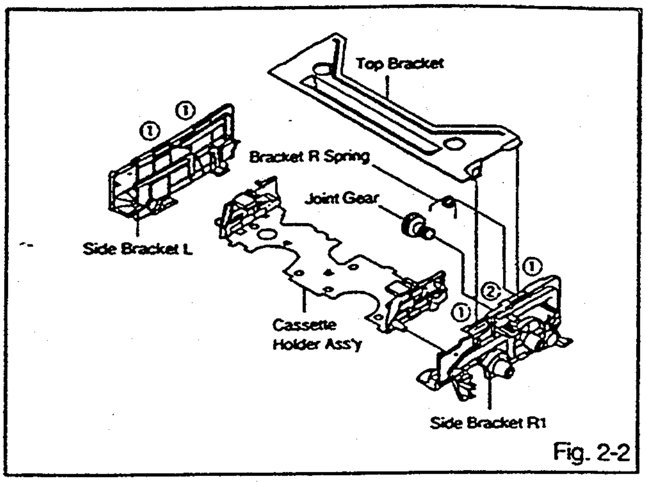

Top Bracket
①
①
Bracket R Spring
Joint Gear
Side Bracket L
①
②
①
Cassette Holder Ass'y
Side Bracket R1

Fig. 2-2

2-3: LINK ASS'Y (Refer to Fig. 2-3)

1. After removing in the direction (A) of Link Ass'y, remove the Link Ass'y in the direction (B).

NOTE

Install the (B) first, then install the (A).

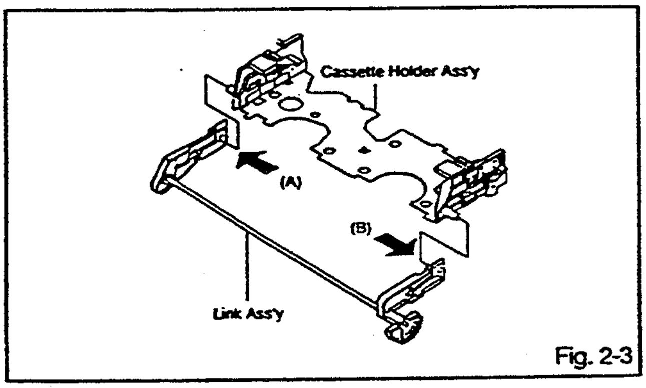

Cassette Holder Ass'y
(A)
(B)
Link Ass'y

Fig. 2-3

2-4: CASSETTE SIDE R (Refer to Fig. 2-4)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side R.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker R.

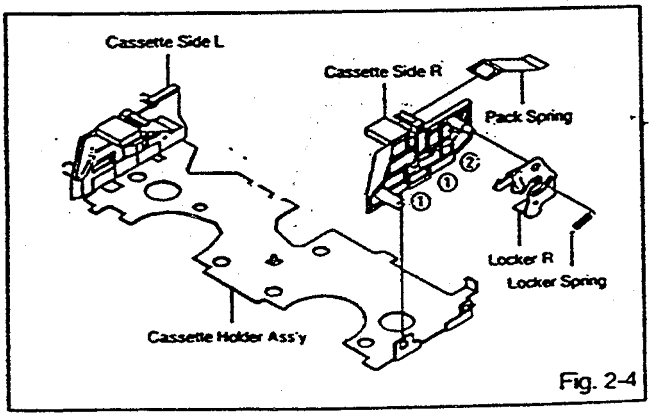

Cassette Side L
Cassette Side R
Pack Spring
②
①
①
Locker R
Locker Spring
Cassette Holder Ass'y

Fig. 2-4

DISASSEMBLY INSTRUCTIONS

2-5: CASSETTE SIDE L (Refer to Fig. 2-5)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side L.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock the support ②.
6. Remove the Locker L.

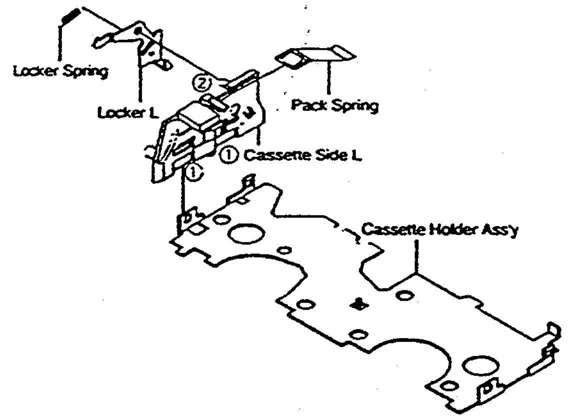

Locker Spring
②
Locker L
Pack Spring
① Cassette Side L
①
Cassette Holder Ass'y

Fig. 2-5

2-6: BRAKE BRACKET (Refer to Fig. 2-6)

1. Remove the Main Brake Spring, S-S Brake Spring, Joint Arm Spring and T-S Brake Spring.
2. Remove the 2 screws ①.
3. Remove the screw ②.
4. Remove the Brake Bracket.
5. Remove the Sub Brake S, Sub Brake T, Main Brake S Ass'y and Main Brake T Ass'y.
6. Remove the Joint Arm.
7. Remove the Reflector LED 2.

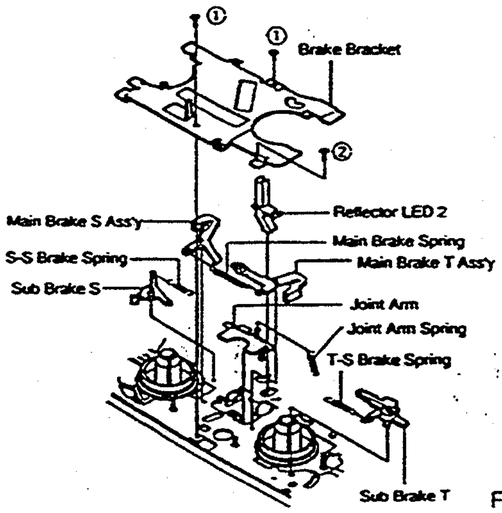

①
①
Brake Bracket
②
Main Brake S Ass'y
S-S Brake Spring
Sub Brake S
Reflector LED 2
Main Brake Spring
Main Brake T Ass'y
Joint Arm
Joint Arm Spring
T-S Brake Spring
Sub Brake T

Fig. 2-6

2-7: TENSION BAND (Refer to Fig. 2-7)

1. Remove the Tension Arm Spring 1.
2. Remove the Tension Arm Spring 2.
3. Remove the Tension Adjust.
4. Remove the Tension Arm Ass'y.
5. Remove the Tension Band Ass'y.
6. Remove the Tension Lever 2 Ass'y.

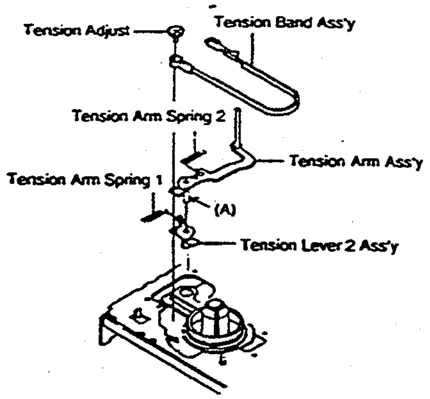

Tension Adjust
Tension Band Ass'y
Tension Arm Spring 2
Tension Arm Ass'y
Tension Arm Spring 1
(A)
Tension Lever 2 Ass'y

Fig. 2-7

NOTE

1. Install the Tension Band Ass'y without twisting it.
2. Oil (kyoudo oil slaidasu #150) the area marked with A in Fig. 2-7.

2-8: REEL DISK (Refer to Fig. 2-8)

1. Remove the Reel Disk S and Reel Disk T.
2. Remove the 2 polyslider washers.

NOTES

1. Installation of Reel Disk after performing step 1, 2 and 3 in section 2-7 of DISASSEMBLY INSTRUCTIONS.
2. The Height Adjustment washers are sometimes attached to the back of the Reel Disk.
3. Clean the Reel Disk Shaft and put in height adjusting washers.
4. Be careful not to damage the Tension Band Ass'y at the time of removal and installation.
5. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
6. After oiling (Kyoudo oil slaidasu #150) the Reel Disk Shaft, install the new Reel Disk S and Reel Disk T again.
7. After installation, adjust the height of the Reel Disk. **(Refer to item 1-1 of MECHANICAL ADJUSTMENTS)**
8. After installation, adjust and confirm the tension post position. **(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)**

DISASSEMBLY INSTRUCTIONS

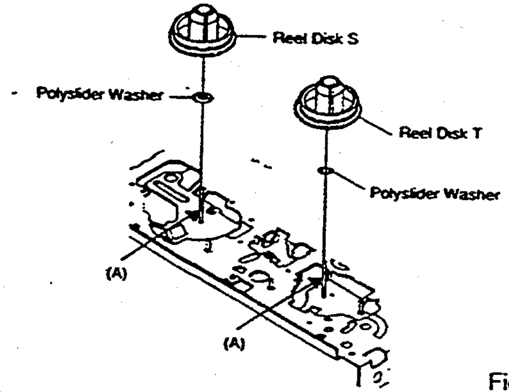

Reel Disk S
Polyslider Washer
Reel Disk T
Polyslider Washer
(A)
(A)

Fig. 2-8

2-9: PINCH ROLLER / CASSETTE OPENER (Refer to Fig. 2-9)

1. Unlock the support ①.
2. Remove the Pinch Roller.
3. Remove the screw ②.
4. Unlock the 2 supports ③.
5. Remove the Cassette Opener.
6. Remove the Spring P5 and Arm P5 Ass'y.
7. Remove the Cam Gear and Cam Pinch Roller.
8. Remove the polyslider washer and Cam P5.

NOTES

1. Do not touch the Pinch Roller. (Use gloves.)
2. When installing the Cam P5, Cam Pinch Roller and Cam Gear, align the timing marks.

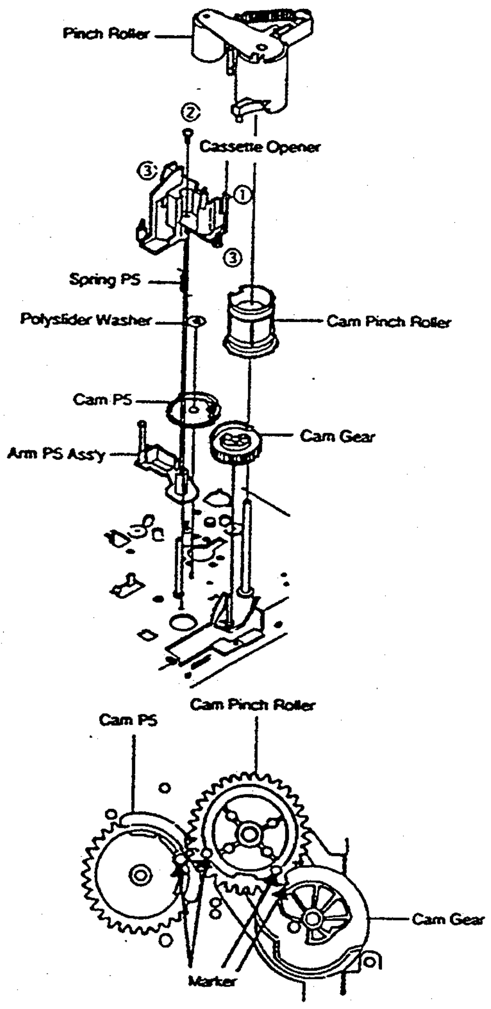

Pinch Roller
②
Cassette Opener
③
①
③
Spring P5
Polyslider Washer
Cam Pinch Roller
Cam P5
Cam Gear
Arm P5 Ass'y
Cam Pinch Roller
Cam P5
Cam Gear
Marker

Fig. 2-9

2-10: AUDIO CONTROL HEAD (Refer to Fig. 2-10)

1. Disconnect the connector: (CP4106 6 pins) on the Head Amp PCB.
2. Remove the 3 screws ①.
3. Remove the 3 Audio Control Head Springs.
4. Remove the Audio Control Head.

NOTES

1. Do not touch the head by any means when replacing the Audio Control Head. (Use gloves.)
2. After replacement, confirm the following adjustments.
   a. MECHANICAL ADJUSTMENTS: ITEM 2-2
   b. MECHANICAL ADJUSTMENTS: ITEM 2-3

DISASSEMBLY INSTRUCTIONS

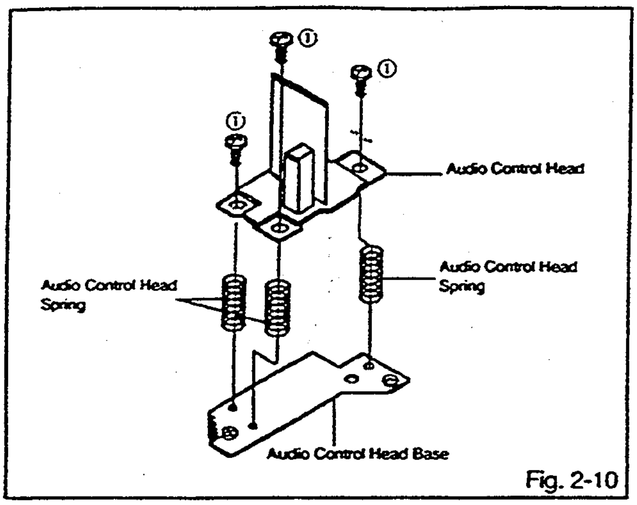

①
①
①
Audio Control Head
Audio Control Head Spring
Audio Control Head Spring
Audio Control Head Base

Fig. 2-10

2-11: CYLINDER UNIT (Refer to Fig. 2-11)

1. Disconnect the following connectors:
   (CP4101 4 pins and CP4102 5 pins).
2. Remove the Joint Screw, then remove the Azimuth Spring.
3. Remove the 2 screws ①, then remove the Polyslider Washer and Cylinder Unit from the Main Chassis.

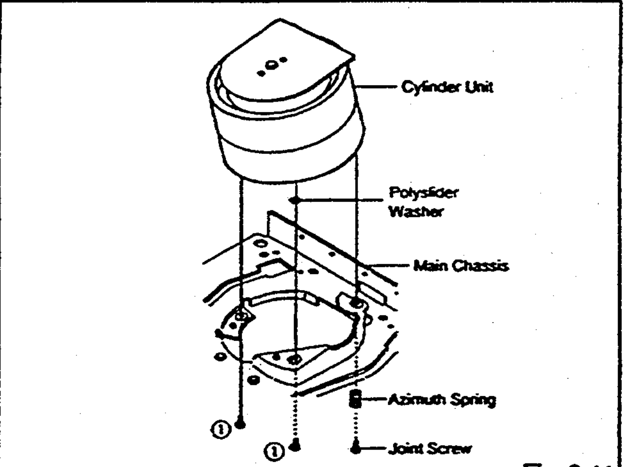

Cylinder Unit
Polyslider Washer
Main Chassis
Azimuth Spring
Joint Screw
①
①

Fig. 2-11

2-12: PLATE BOTTOM (Refer to Fig. 2-12)

1. Remove the Capstan Belt.
2. Remove the 2 screws ①.
3. Remove the 3 screws ②.
4. Remove the Mode Switch.
5. Remove the Tension Lever Spring.
6. Remove the Plate Bottom.

NOTE

When installing the Mode Switch, align the timing position.

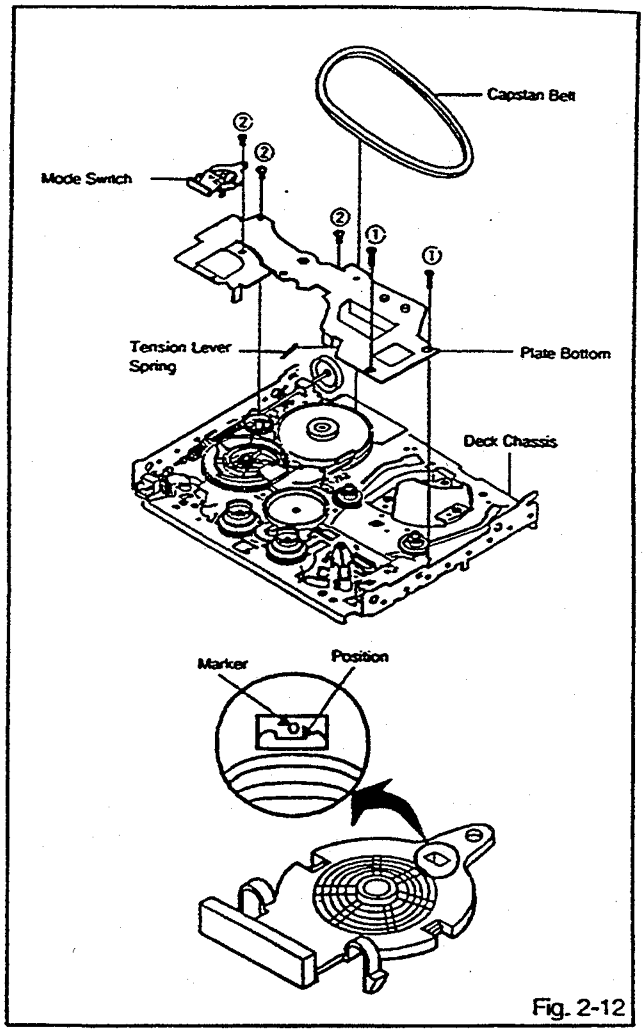

Capstan Belt
Mode Switch
②
②
②
①
①
Tension Lever Spring
Plate Bottom
Deck Chassis
Marker
Position

Fig. 2-12

2-13: CENTER PULLEY (Refer to Fig. 2-13)

1. Remove the polyslider washer ①.
2. Remove the Center Pulley.
3. Remove the polyslider washer ②.
4. Remove the Center Pulley Spring.
5. Remove the Idler Arm Ass'y.
6. Remove the 2 polyslider washers ③.
7. Remove the Clutch Gear T Ass'y and Clutch Gear S Ass'y.

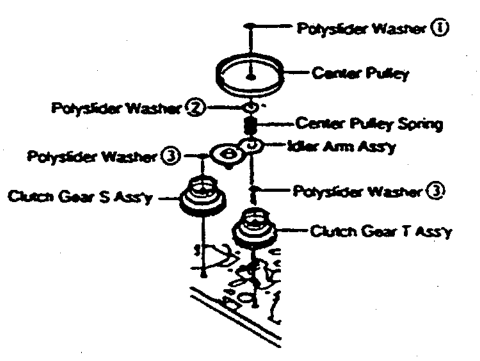

Polyslider Washer ①
Center Pulley
Polyslider Washer ②
Center Pulley Spring
Idler Arm Ass'y
Polyslider Washer ③
Clutch Gear S Ass'y
Polyslider Washer ③
Clutch Gear T Ass'y

Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: MAIN CAM (Refer to Fig. 2-14)

1. Remove the Loading Lever.
2. Remove the Main Brake Lever.
3. Remove the Capstan Brake Spring.
4. Remove the Capstan Brake Ass'y.
5. Remove the Main Rod Spring.
6. Remove the Tension Holder.
7. Remove the Tension Lever.
8. Remove the Main Cam.
9. Remove the Middle Gear.
10. Remove the Main Rod Ass'y.

NOTES

1. When installing the Main Rod Ass'y, install side (B) first, then install side (A).
2. When installing the Loading Lever, align the timing marks.

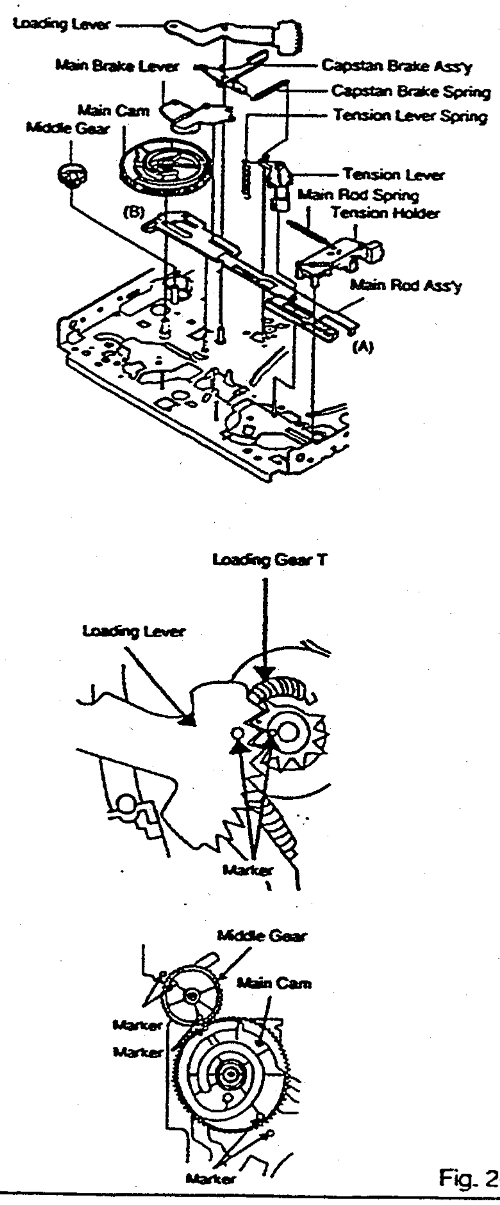

Loading Lever
Main Brake Lever
Capstan Brake Ass'y
Capstan Brake Spring
Main Cam
Tension Lever Spring
Middle Gear
Tension Lever
Main Rod Spring
(B)
Tension Holder
Main Rod Ass'y
(A)
Loading Gear T
Loading Lever
Marker
Middle Gear
Main Cam
Marker
Marker
Marker

Fig. 2-14

2-15: CAPSTAN DD UNIT (Refer to Fig. 2-15)

1. Remove the screw ①.
2. Disconnect the CP4105 9 pins.
3. Remove the 3 screws ②.
4. Remove the Capstan DD Unit.

NOTE

-- Use the specified screw to hold the Capstan DD Unit.

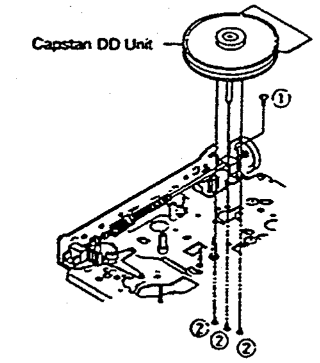

Capstan DD Unit
①
②
②
②

Fig. 2-15

2-16: INCLINED T ASS'Y / INCLINED S ASS'Y (Refer to Fig. 2-16)

1. Remove the 2 Slider Loadings.
2. Remove the Inclined T Ass'y and Inclined S Ass'y.
3. Remove the Loading Gear T Ass'y.
4. Remove the Loading Gear S Ass'y.

NOTE

When installing the Inclined T Ass'y and Inclined S Ass'y, align the timing marks.

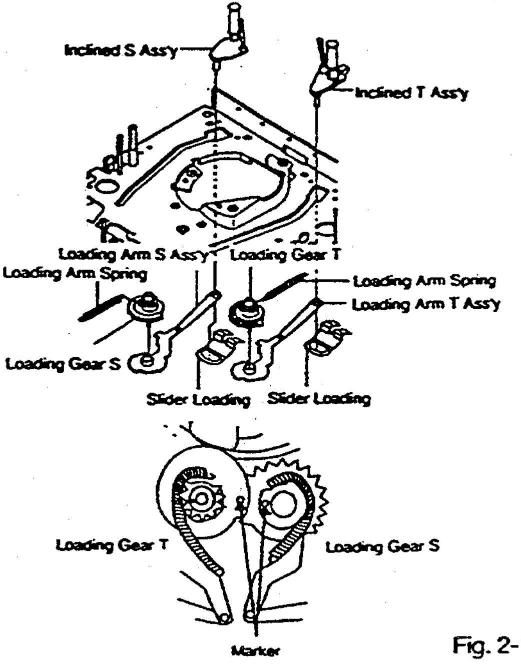

Inclined S Ass'y
Inclined T Ass'y
Loading Arm S Ass'y
Loading Gear T
Loading Arm Spring
Loading Arm Spring
Loading Arm T Ass'y
Loading Gear S
Slider Loading
Slider Loading
Loading Gear T
Loading Gear S
Marker

Fig. 2-16

KEY TO ABBREVIATIONS

A A/C : Audio/Control
ACC : Automatic Color Control
AE : Audio Erase
AFC : Automatic Frequency Control
AFT : Automatic Fine Tuning
AFT DET : Automatic Fine Tuning Detect
AGC : Automatic Gain Control
AMP : Amplifier
ANT : Antenna
A.PB : Audio Playback
APC : Automatic Phase Control
ASS'Y : Assembly
AT : All Time
AUTO : Automatic
A/V : Audio/Video
B BGP : Burst Gate Pulse
BOT : Beginning of Tape
BPF : Bandpass Filter
BRAKE SOL : Brake Solenoid
BUFF : Buffer
B/W : Black and White
C C : Capacitance, Collector
CASE : Cassette
CAP : Capstan
CARR : Carrier
CH : Channel
CLK : Clock
CLOCK (SY-SE) : Clock (Syscon to Servo)
COMB : Combination, Comb Filter
CONV : Converter
CPM : Capstan Motor
CTL : Control
CYL : Cylinder
CYL-M : Cylinder-Motor
CYL SENS : Cylinder-Sensor
D DATA (SY-CE) : Data (Syscon to Servo)
dB : Decibel
DC : Direct Current
DD Unit : Direct Drive Motor Unit
DEMOD : Demodulator
DET : Detector
DEV : Deviation
E E : Emitter
EF : Emitter Follower
EMPH : Emphasis
ENC : Encoder
ENV : Envelope
EOT : End of Tape
EQ : Equalizer
EXT : External
F F : Fuse
FBC : Feed Back Clamp
FE : Full Erase
FF : Fast Forward, Flipflop
FG : Frequency Generator
FL SW : Front Loading Switch
FM : Frequency Modulation
FSC : Frequency Sub Carrier
FWD : Forward
G GEN : Generator
GND : Ground
H H.P.F : High Pass Filter
H.SW : Head Switch
Hz : Hertz
I IC : Integrated Circuit
IF : Intermediate Frequency
IND : Indicator
INV : Inverter
K KIL : Killer
L L : Left
LED : Light Emitting Diode
LIMIT AMP : Limiter Amplifier
LM, LDM : Loading Motor
LP : Long Play
L.P.F : Low Pass Filter
LUMI. : Luminance
M M : Motor
MAX : Maximum
MINI : Minimum
MIX : Mixer, mixing
MM : Monostable Multivibrator
MOD : Modulator, Modulation
MPX : Multiplexer, Multiplex
MS SW : Mech State Switch
N NC : Non Connection
NR : Noise Reduction
O OSC : Oscillator
OPE : Operation
P PB : Playback
PB CTL : Playback Control
PB-C : Playback-Chrominance
PB-Y : Playback-Luminance
PCB : Printed Circuit Board
P. CON : Power Control
PD : Phase Detector
PG : Pulse Generator
P-P : Peak-to Peak
R R : Right
REC : Recording
REC-C : Recording-Chrominance
REC-Y : Recording-Luminance
REEL BRK : Reel Brake
REEL S : Reel Sensor
REF : Reference
REG : Regulated, Regulator
REW : Rewind
REV, RVS : Reverse
RF : Radio Frequency
RMC : Remote Control
RY : Relay
S S. CLK : Serial Clock
S. COM : Sensor Common
S. DATA : Serial Data
SEG : Segment
SEL : Select, Selector
SENS : Sensor
SER : Search Mode
SI : Serial Input
SIF : Sound Intermediate Frequency
SO : Serial Output
SOL : Solenoid
SP : Standard Play
STB : Serial Strobe
SW : Switch

KEY TO ABBREVIATIONS

S SYNC : Synchronization
SYNC SEP : Sync Separator, Separation
T TR : Transistor
TRAC : Tracking
TRICK PB : Trick Playback
TP : Test Point
U UNREG : Unregulated
V V : Volt
VCO : Voltage Controlled Oscillator
VIF : Video Intermediate Frequency
VP : Vertical Pulse, Voltage Display
V.PB : Video Playback
VR : Variable Resistor
V.REC : Video Recording
VSF : Visual Search Fast Forward
VSR : Visual Search Rewind
VSS : Voltage Super Source
V-SYNC : Vertical-Synchronization
VT : Voltage Tuning
X XTAL : Crystal
Y Y/C : Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	~ 500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head	■	■	■	■	■	
Loading Motor Belt		■		●		Clean the rubber, and parts which the rubber touches.
Reel Belt		■		●		
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■ ●	■	■ ●	■ ●	Clean the Head.

● : Replace ■ : Clean

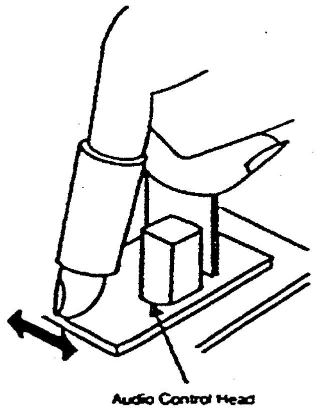
CLEANING

NOTE

- After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below)**



2. TAPE RUNNING SYSTEM

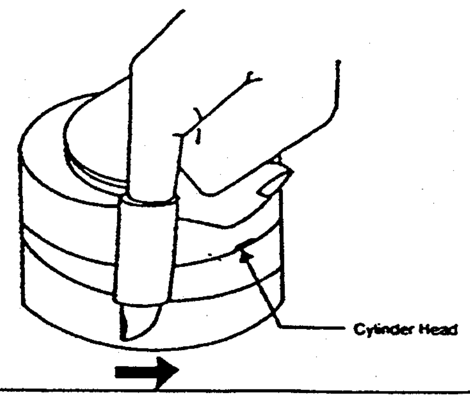
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below)**

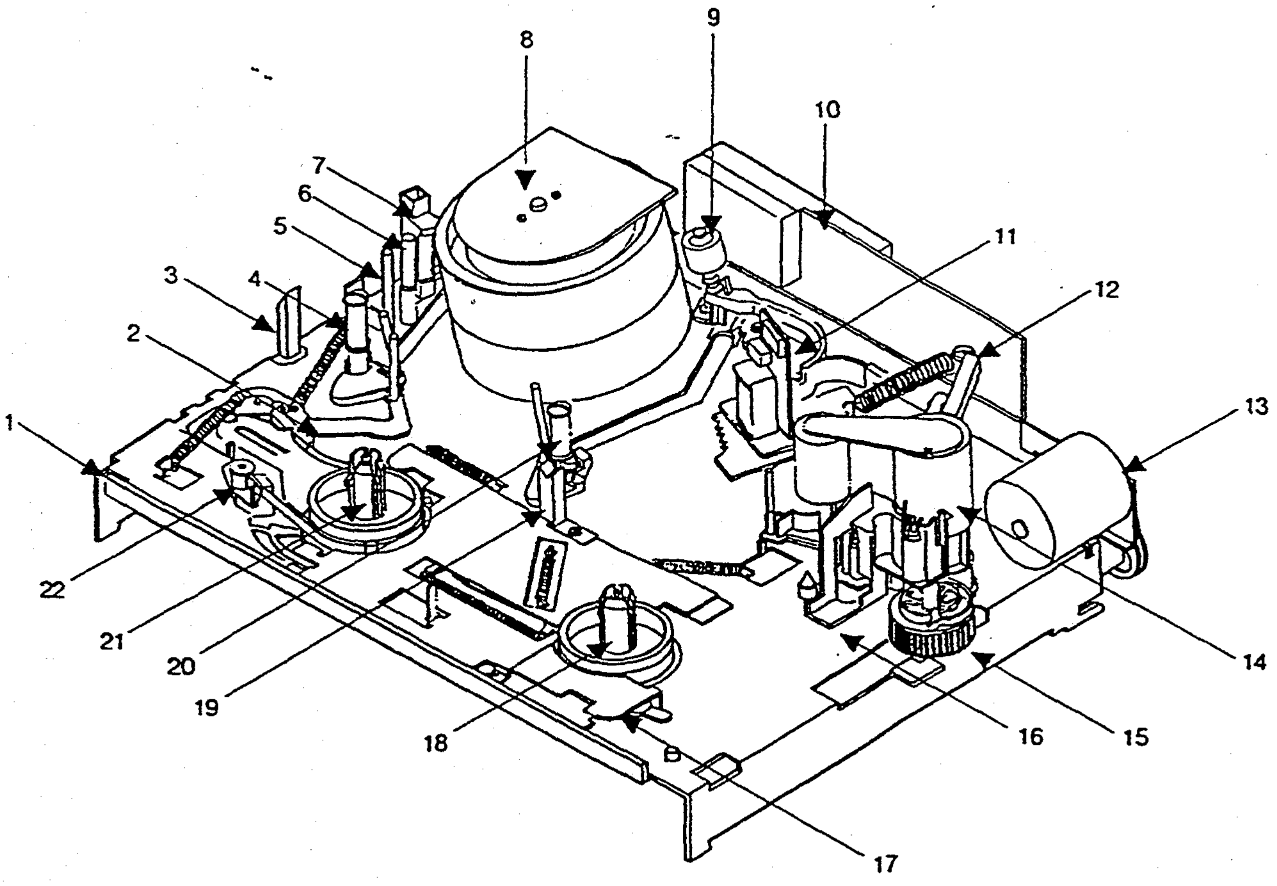
NOTE

Do not exert force against the cylinder head. Do not move the chamois up or down since this can damage the head. Always use a piece of chamois for cleaning.



DECK PARTS LOCATIONS

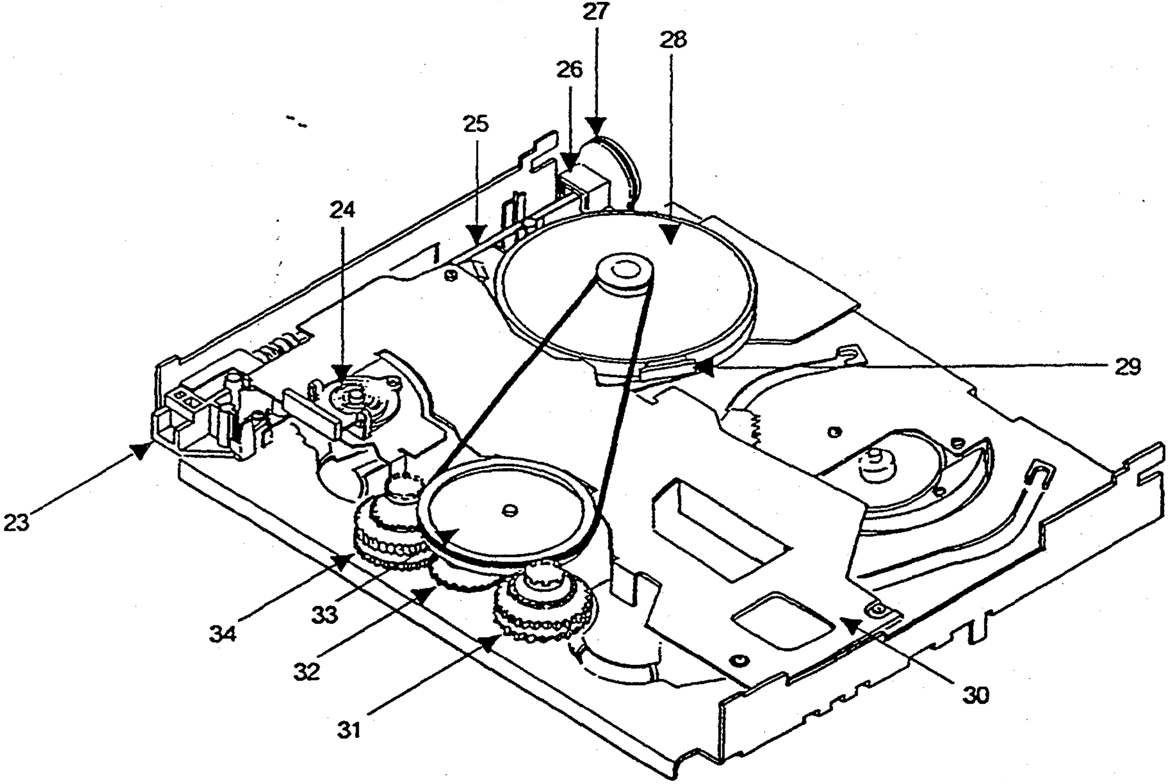
(TOP VIEW)


8
9
10
7
6
5
11
3
4
12
2
13
1
22
14
21
20
19
18
16
15
17

1. Main Chassis	13. Loading Motor
2. Tension Arm Ass'y	14. Pinch Roller Block
3. EOT Reflector	15. Cam Gear
4. Guide Roller S Ass'y	16. Cassette Opener
5. P0 Post	17. Brake Bracket
6. P1 Post	18. Reel
7. FE Head	19. LED Reflector
8. Cylinder Unit	20. Guide Roller T Ass'y
9. Auto Head Cleaning	21. Reel
10. Head Amp PCB	22. Tension Band Ass'y
11. Audio/Control Head	
12. Deck Relay PCB	

DECK PARTS LOCATIONS

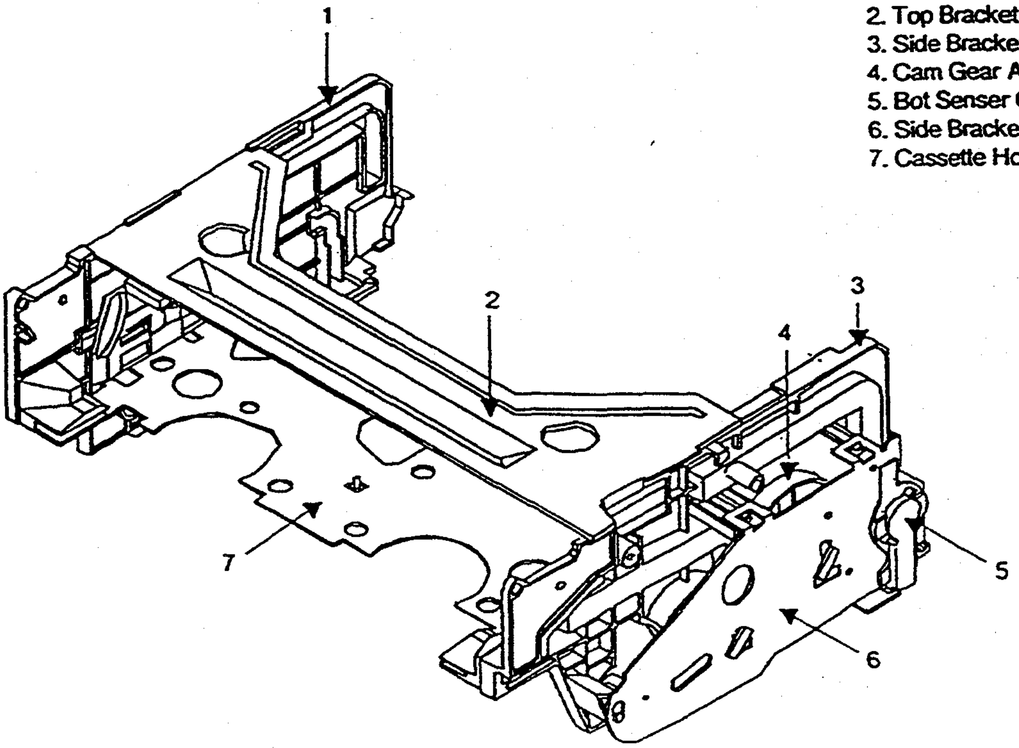
(BOTTOM VIEW)



23. Worm Bracket F Ass'y
24. Mode Switch
25. Worm Ass'y
26. Worm Bracket R Ass'y
27. Loading Motor Belt
28. Capstan DD Unit
29. Capstan Brake Ass'y
30. Bottom Plate
31. Clutch Gear S Ass'y
32. Idler Arm Ass'y
33. Center Pulley
34. Clutch Gear T Ass'y

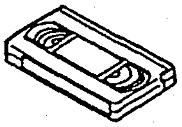
(UNIT ASS'Y)

1. Side Bracket L
2. Top Bracket Ass'y
3. Side Bracket R Ass'y
4. Cam Gear Ass'y
5. Bot Senser Cover
6. Side Bracket R2
7. Cassette Holder Ass'y

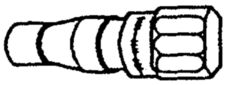


SERVICING FIXTURES AND TOOLS

VHS Alignment Tape
JG001E (VP$_1$S-U6^3)
JG001F (VP$_1$S-C01^3)

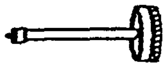


JG002B Adapter
JG002F Dial Torque Gauge
(60~600gr/cm)
JG002G (100~1200gr/cm)

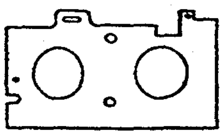


JG005 Post Adjustment
Screwdriver
Part No. SV-TG0-030-000
(small)

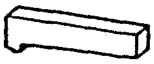
JG153 X Value Adjustment
Screwdriver



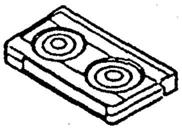
JG022 Master Plane



JG024 Reel Disk Height
Adjustment Jig

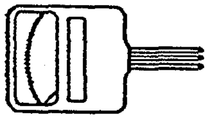


JG100A Torque Tape
(VHT-063)



JG155 Remote Control

Tentelometer



Part No.	Remarks
JG001E	Monoscope, 6KHz
JG001F	Color Bar, 1KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque (Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG153	X-Value Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG100A	Playback Back Tension Torque
JG155	Used for PG SHIFTER Adjustment

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

- * Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the Unit Ass'y. (Do not place an object which weighs over 500g.)
- * When you activate the deck without the Unit Ass'y, short circuit between TP1010 and TP1011. In this condition the BOT/EOT sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (JG022) and reel disk height adjustment jig (JG024) on mechanism framework, taking care not to scratch the drum, as shown in Fig. 1-1-A.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig (JG024) on the master plane and higher than "B" as shown in Fig. 1-1-B. If it is not, adjust to less than 7.5mm±0.2mm with the height adjustment washer.
4. Perform the same adjustment for other reel.

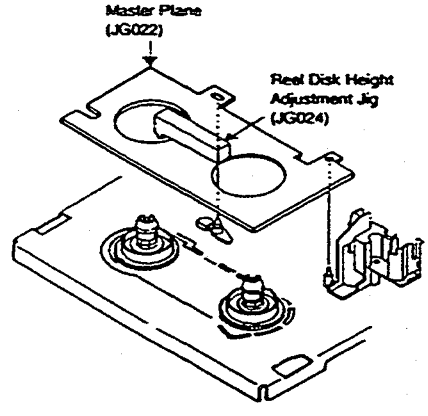

Master Plane
(JG022)
Reel Disk Height
Adjustment Jig
(JG024)

Fig. 1-1-A

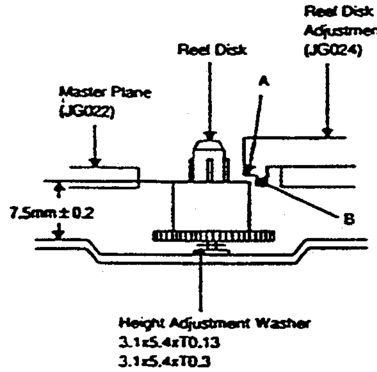

Reel Disk Height
Adjustment Jig
(JG024)
Reel Disk
A
Master Plane
(JG022)
7.5mm±0.2
B
Height Adjustment Washer
3.1x5.4xT0.13
3.1x5.4xT0.3

Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode adjust the Tension Adjust so that the Tension Post is at the position of 0.3mm~0.5mm from the Rib. (Refer to Fig. 1-2)
2. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

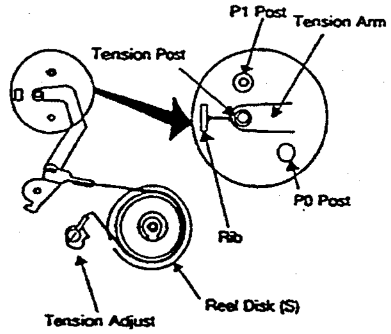

P1 Post
Tension Arm
Tension Post
P0 Post
Rib
Reel Disk (S)
Tension Adjust

Fig. 1-2

1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in Fig. 1-3. Confirm the value is within 20~27gr/cm at this time.

※ IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.

1. After adjustment, confirm and adjust the tension post position (Refer to item 1-2) for the tension arm, install the cassette type torque tape (JG100A) and set to the PLAY mode.
2. Confirm that the left hand side tension value of the torque tape is 25~38gr/cm for the standard mode tape.

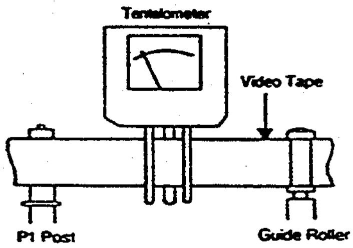

Tentelometer
Video Tape
P1 Post
Guide Roller

Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge (**JG002G**) on take-up reel disk, and place unit in FAST FORWARD mode. (**Refer to Fig. 1-4**)
2. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge (**JG002G**) on supply reel disk, and place the unit in REWIND mode. (**Refer to Fig 1-4**).
3. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) (**Refer to Fig. 1-4**)

1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gr/cm at that time.

(Supply Reel Brake) (**Refer to Fig. 1-4**)

1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gr/cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.

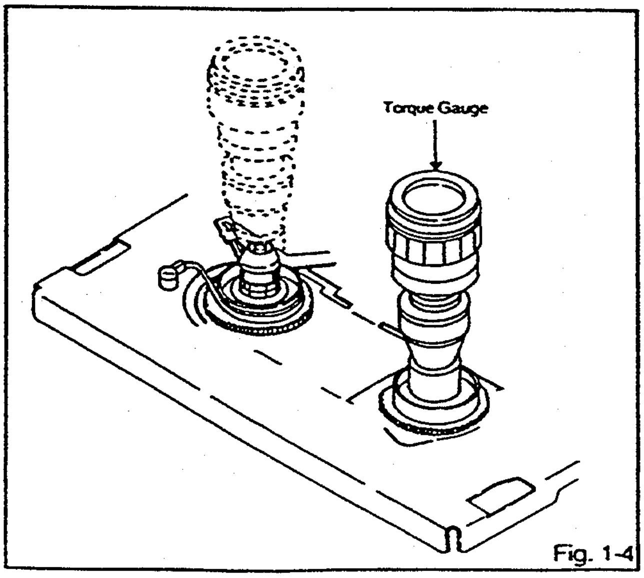


Fig. 1-4

NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Clutch ASS'Y
1-5	Idler Ass'y or Clutch ASS'Y
1-6	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

Tape running is adjusted precisely at the factory.
Normally, it is not necessary to make adjustments.
It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

2-1: GUIDE ROLLER

1. Connect CH-1 on the oscilloscope to **TP4002 (PB Envelope)** and CH-2 to **TP4001 (SW Pulse)**.
2. Set the tracking to manual center position in the following way. Hold and press the tracking auto button more than 2 seconds to set the tracking to center position.
3. Trigger with SW pulse and observe the envelope. (**Refer to Fig. 2-1-A**)
4. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver **JG005**).
5. Press and hold the tracking control button and (at the point that the envelope waveform starts to reduce) adjust the envelope so that the A : B ratio is better than 3 : 2. (**Refer to Fig. 2-1-B**)
6. Adjust the PG shifter (**ELECTRICAL ADJUSTMENTS : ITEM 3-1**) in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. (**Refer to item 2-2**)

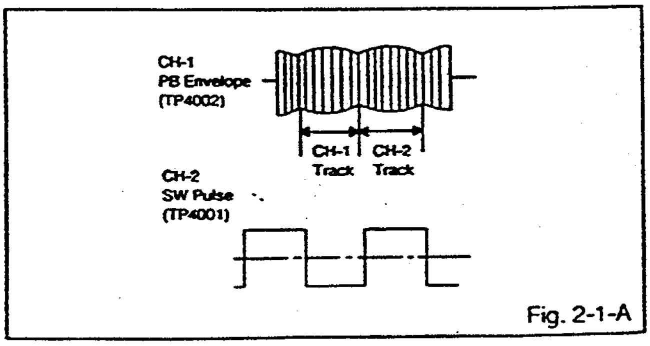


Fig. 2-1-A

MECHANICAL ADJUSTMENTS

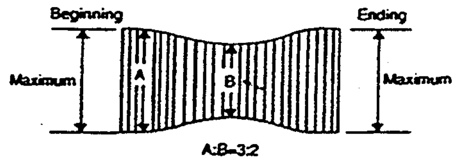


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller (R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. (Refer to Fig. 2-2)

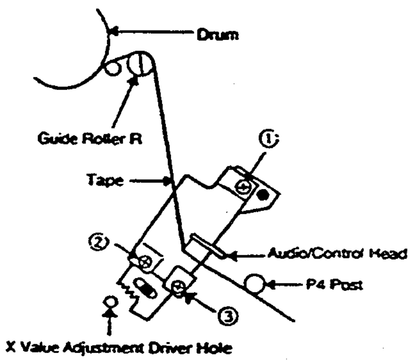


Fig.2-2

2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Playback a VHS alignment tape (JG001E) and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the height so that the audio output becomes maximum. (Refer to Fig. 2-2)
3. Adjust the screw ③, (Refer to Fig. 2-2) until the height of the A/C head reaches the position against the tape as shown in Fig. 2-3.
4. When the control head height is not fit. (When you must turn the screw more than 45 degrees). Turn all of the screws ①, ② and ③ to the same degrees.
   Then confirm the angle of the audio/control head and adjust again.

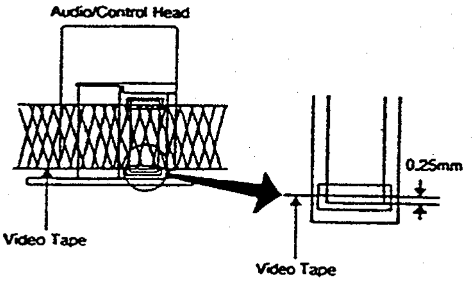


Fig. 2-3

2-4: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk.
   (Refer to item 1-1)
2. Confirm and adjust tension post position.
   (Refer to item 1-2)
3. Adjust the guide roller.
   (Refer to item 2-1)
4. Adjust the A/C head tilt.
   (Refer to item 2-2)
5. Adjust the A/C head height and azimuth.
   (Refer to item 2-3)
6. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to TP4002. Playback the VHS alignment tape (JG001E). Set the tracking to manual center. Adjust X with the screw driver for X (JG153) as the Fig. 2-1-A and Fig. 2-1-B. **(Refer to No. 2 of the item 2-1).**

ELECTRICAL ADJUSTMENTS

3. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease (YG6260M).
(To prevent the damage to IC's and transistors.)

3-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape (JG001E)

INSTRUCTIONS

1. Playback the alignment tape. (JG001E)
2. Press both Tracking AUTO key on the Customer remote control and the PLAY button on the set simultaneously until the indicator ATR disappear's. If the indicator ATR disappear's, the adjustment is finished.

(If the ATR indicator is still illuminated)

1. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to Pin 19 of J4501.
2. Press the PG AUTO key. (JG155)
3. While the ATR indicator is flashing, press the PG MANUAL key. (JG155)
4. Adjust the Tracking +/– key until waveform of the oscilloscope measures 6.5 ± 0.5(H) at both leading and trailing edges. (Refer to Fig. 3-1-A, B)
5. Press the Tracking Auto key.

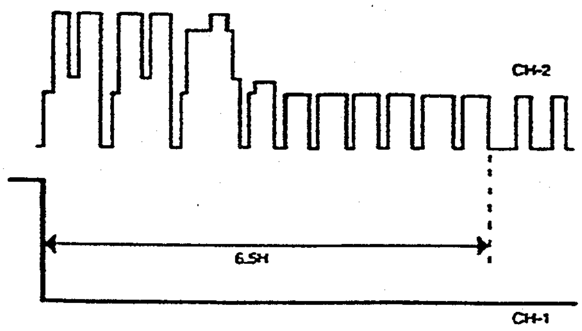


Fig. 3-1-A

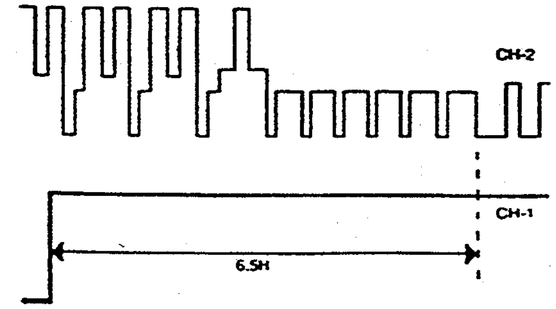
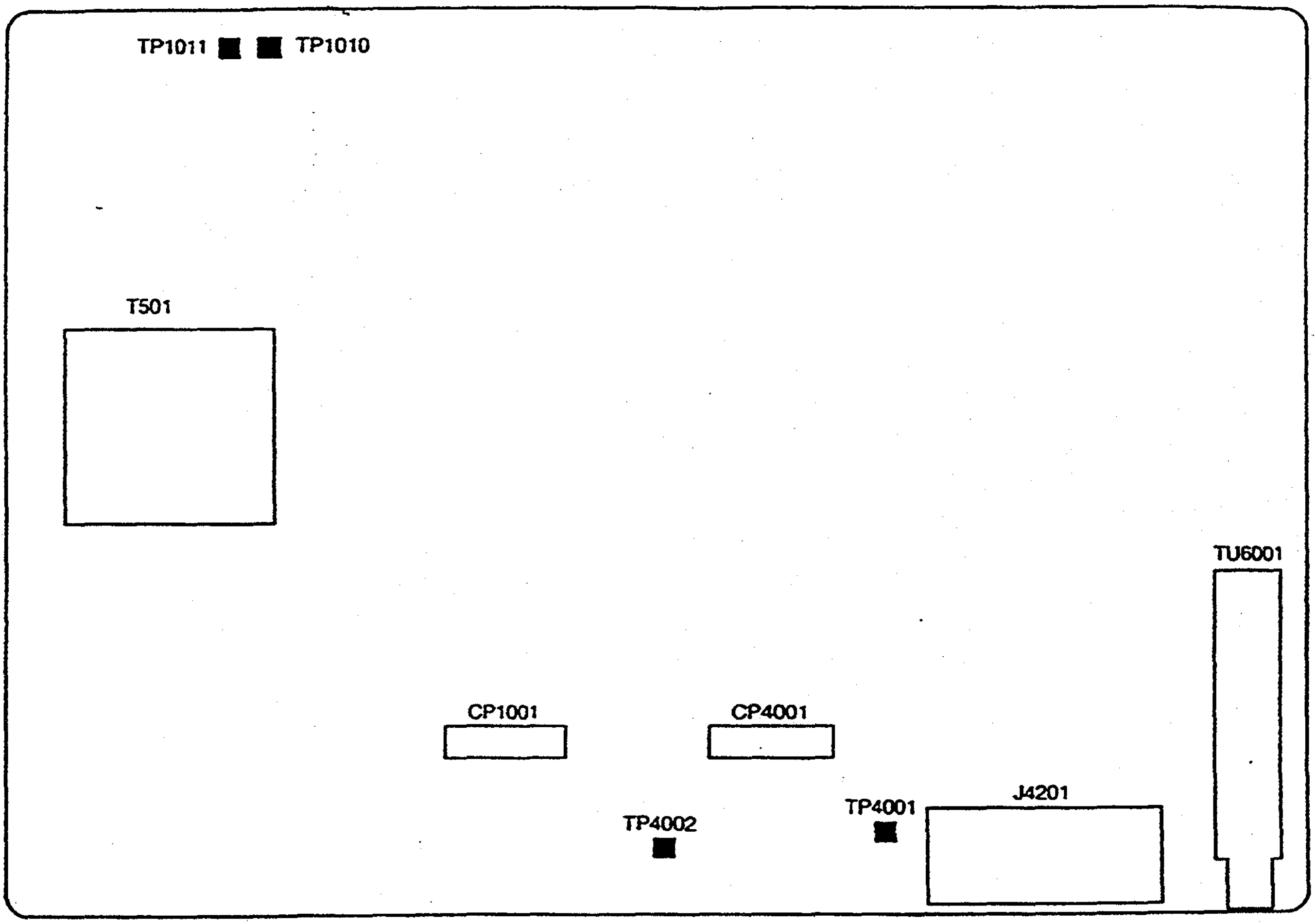


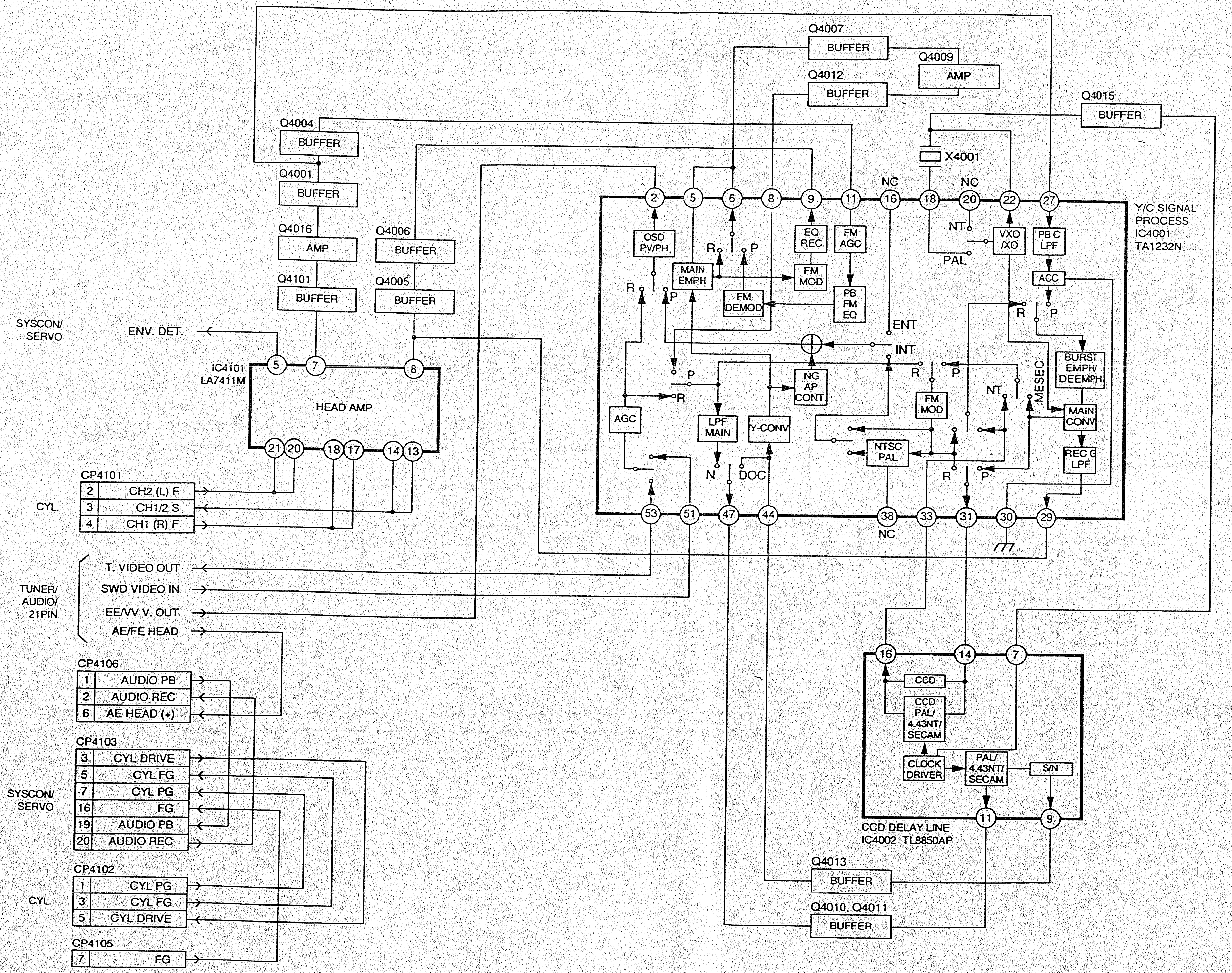
Fig. 3-1-B

MAJOR COMPONENTS LOCATION GUIDE


TP1011
TP1010
T501
TU6001
CP1001
CP4001
TP4001
J4201
TP4002

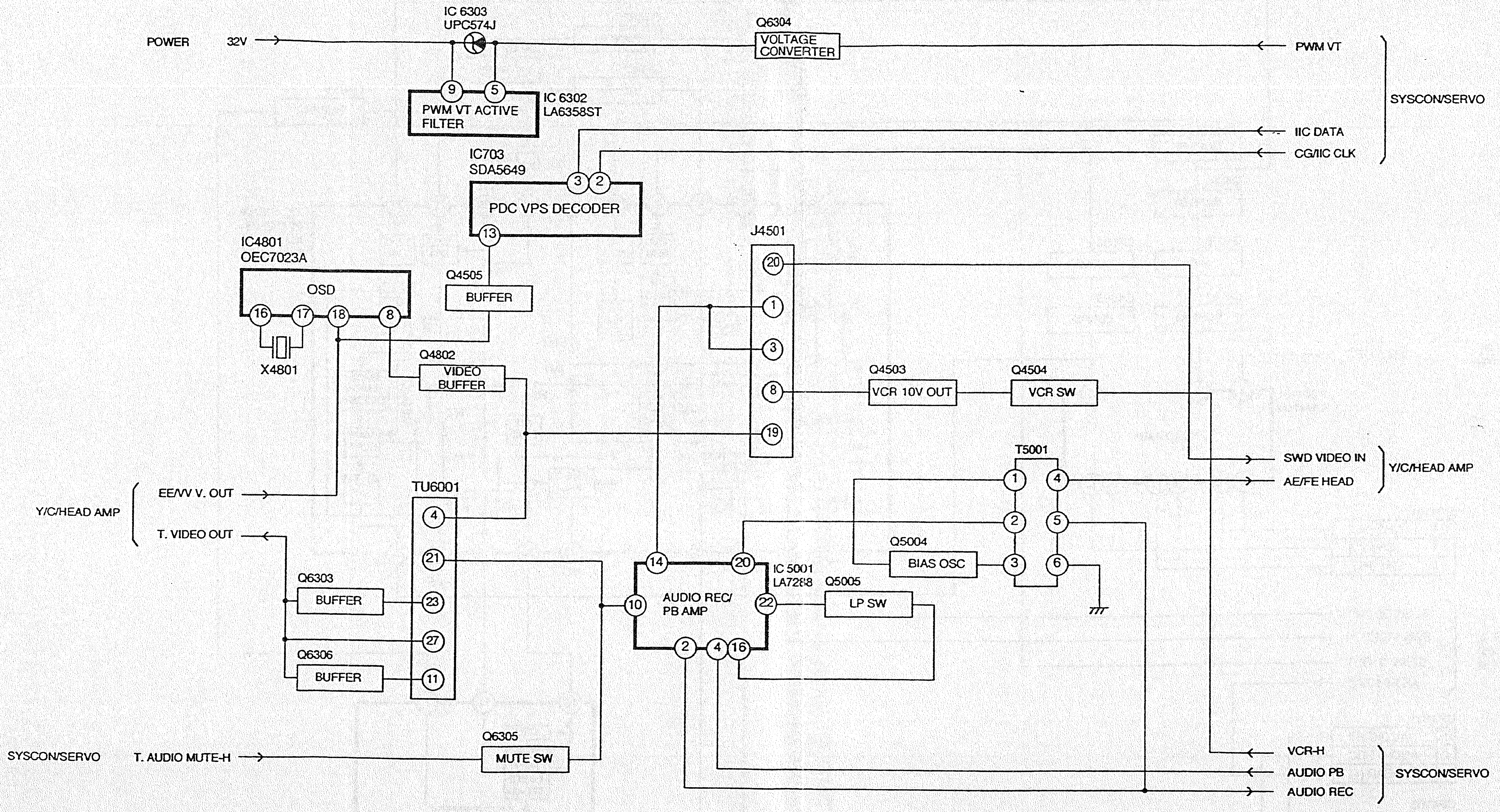
MAIN

Y/C／HEAD AMP BLOCK DIAGRAM


Q4007
BUFFER
Q4009
AMP
Q4012
BUFFER
Q4015
BUFFER
Q4004
BUFFER
X4001
Q4001
BUFFER
Q4016
AMP
Q4006
BUFFER
Q4101
BUFFER
Q4005
BUFFER
NC
NC
Y/C SIGNAL
PROCESS
IC4001
TA1232N
OSD
PV/PH
MAIN
EMPH
EQ
REC
FM
AGC
FM
MOD
FM
DEMOD
PB
FM
EQ
NT
PAL
VXO
/XO
PB C
LPF
ACC
BURST
EMPH/
DEEMPH
MAIN
CONV
REC C
LPF
MESEC
ENT
INT
NG
AP
CONT.
FM
MOD
AGC
LPF
MAIN
Y-CONV
NTSC
PAL
R
P
N
DOC
NC
SYSCON/
SERVO
ENV. DET.
IC4101
LA7411M
HEAD AMP
CP4101
2 CH2 (L) F
3 CH1/2 S
4 CH1 (R) F
CYL.
TUNER/
AUDIO/
21PIN
T. VIDEO OUT
SWD VIDEO IN
EE/VV V. OUT
AE/FE HEAD
CP4106
1 AUDIO PB
2 AUDIO REC
6 AE HEAD (+)
CP4103
3 CYL DRIVE
5 CYL FG
7 CYL PG
16 FG
19 AUDIO PB
20 AUDIO REC
SYSCON/
SERVO
CP4102
1 CYL PG
3 CYL FG
5 CYL DRIVE
CYL.
CP4105
7 FG
CCD
CCD
PAL/
4.43NT/
SECAM
CLOCK
DRIVER
PAL/
4.43NT/
SECAM
S/N
CCD DELAY LINE
IC4002 TL8850AP
Q4013
BUFFER
Q4010, Q4011
BUFFER

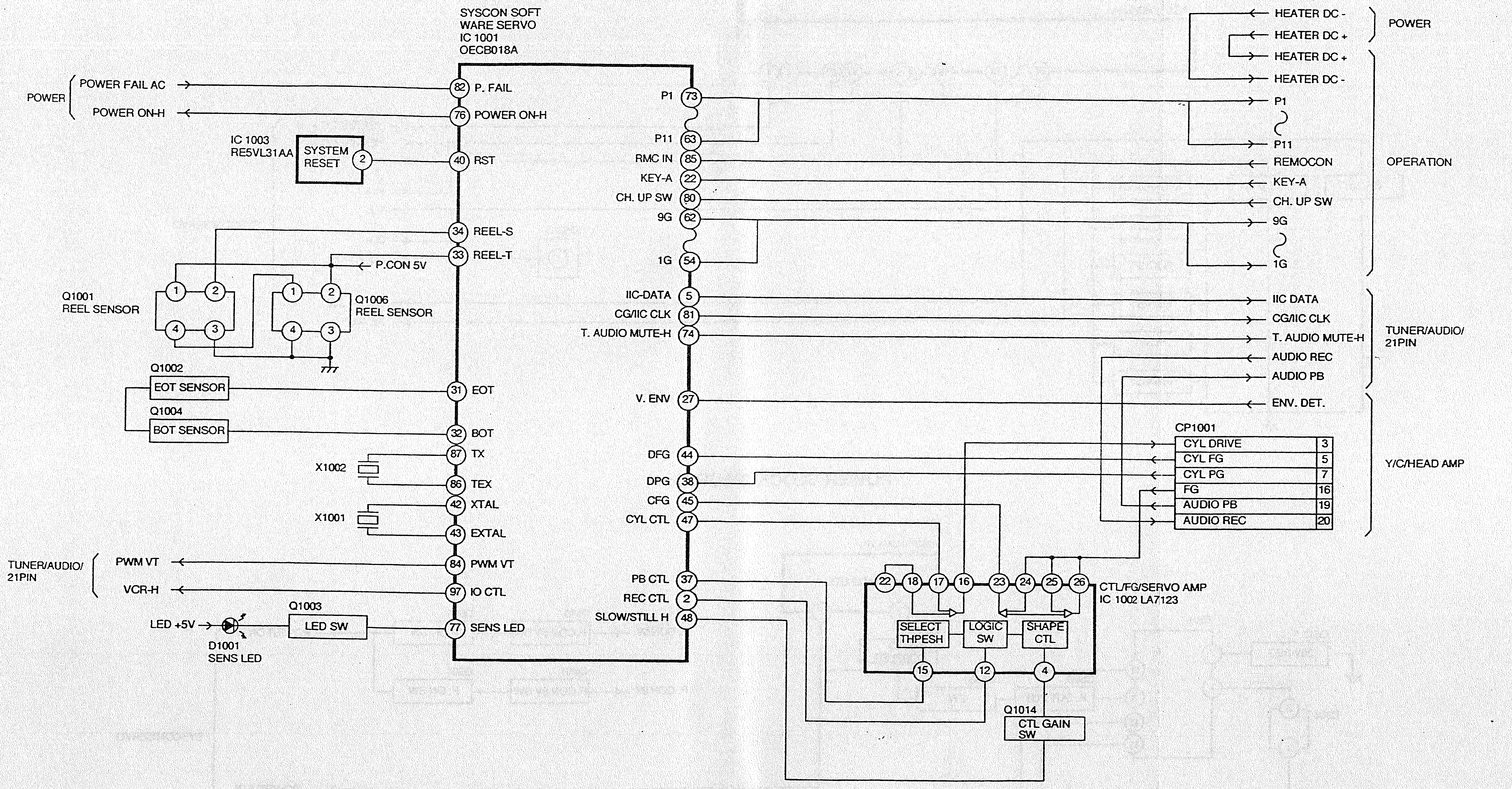
3-5329

TUNER／AUDIO／21PIN BLOCK DIAGRAM


POWER
32V
IC 6303
UPC574J
9
5
PWM VT ACTIVE FILTER
IC 6302
LA6358ST
Q6304
VOLTAGE CONVERTER
PWM VT
SYSCON/SERVO
IIC DATA
CG/IIC CLK
IC703
SDA5649
3
2
PDC VPS DECODER
13
IC4801
OEC7023A
OSD
16
17
18
8
X4801
Q4505
BUFFER
Q4802
VIDEO BUFFER
J4501
20
1
3
8
19
Q4503
VCR 10V OUT
Q4504
VCR SW
SWD VIDEO IN
AE/FE HEAD
Y/C/HEAD AMP
T5001
1
2
3
4
5
6
Y/C/HEAD AMP
EE/VV V. OUT
T. VIDEO OUT
TU6001
4
21
23
27
11
Q6303
BUFFER
Q6306
BUFFER
14
20
10
22
2
4
16
AUDIO REC/ PB AMP
IC 5001
LA7288
Q5005
LP SW
Q5004
BIAS OSC
SYSCON/SERVO
T. AUDIO MUTE-H
Q6305
MUTE SW
VCR-H
AUDIO PB
AUDIO REC
SYSCON/SERVO

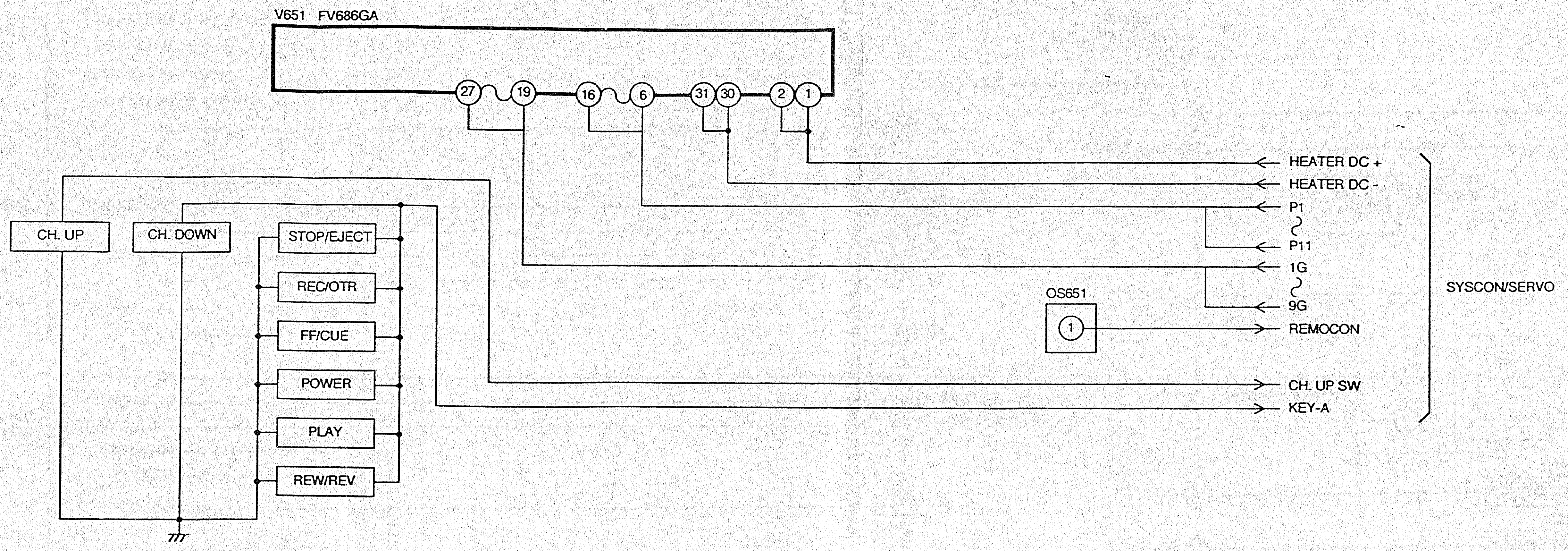
3-5346

SYSTEM CONTROL／SERVO BLOCK DIAGRAM

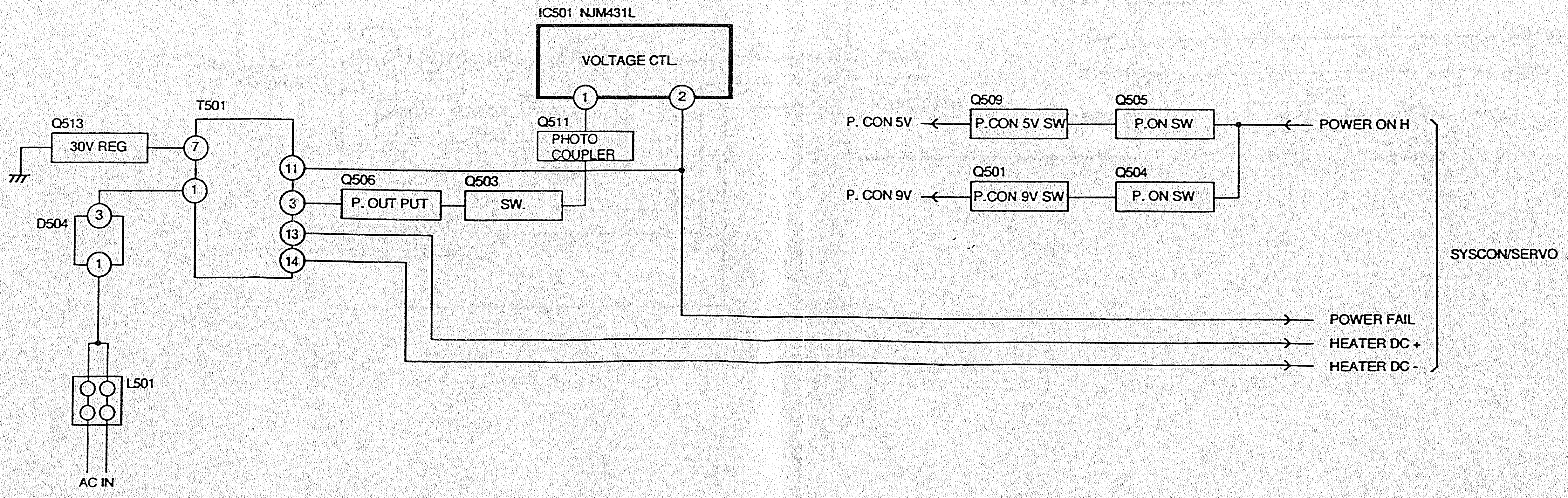

SYSCON SOFT
WARE SERVO
IC 1001
OECB018A
POWER
POWER FAIL AC
POWER ON-H
82 P. FAIL
76 POWER ON-H
IC 1003
RE5VL31AA
SYSTEM RESET
2
40 RST
34 REEL-S
33 REEL-T
P.CON 5V
Q1001
REEL SENSOR
Q1006
REEL SENSOR
1
2
3
4
Q1002
EOT SENSOR
Q1004
BOT SENSOR
31 EOT
32 BOT
87 TX
X1002
86 TEX
42 XTAL
X1001
43 EXTAL
TUNER/AUDIO/
21PIN
PWM VT
VCR-H
84 PWM VT
97 IO CTL
Q1003
LED SW
LED +5V
D1001
SENS LED
77 SENS LED
P1 73
P11 63
RMC IN 85
KEY-A 22
CH. UP SW 80
9G 62
1G 54
IIC-DATA 5
CG/IIC CLK 81
T. AUDIO MUTE-H 74
V. ENV 27
DFG 44
DPG 38
CFG 45
CYL CTL 47
PB CTL 37
REC CTL 2
SLOW/STILL H 48
HEATER DC -
HEATER DC +
HEATER DC +
HEATER DC -
POWER
P1
P11
REMOCON
KEY-A
CH. UP SW
9G
1G
OPERATION
IIC DATA
CG/IIC CLK
T. AUDIO MUTE-H
AUDIO REC
AUDIO PB
TUNER/AUDIO/
21PIN
ENV. DET.
CP1001
CYL DRIVE 3
CYL FG 5
CYL PG 7
FG 16
AUDIO PB 19
AUDIO REC 20
Y/C/HEAD AMP
22
18
17
16
23
24
25
26
CTL/FG/SERVO AMP
IC 1002 LA7123
SELECT THPESH
LOGIC SW
SHAPE CTL
15
12
4
Q1014
CTL GAIN SW

3-5345

OPERATION BLOCK DIAGRAM

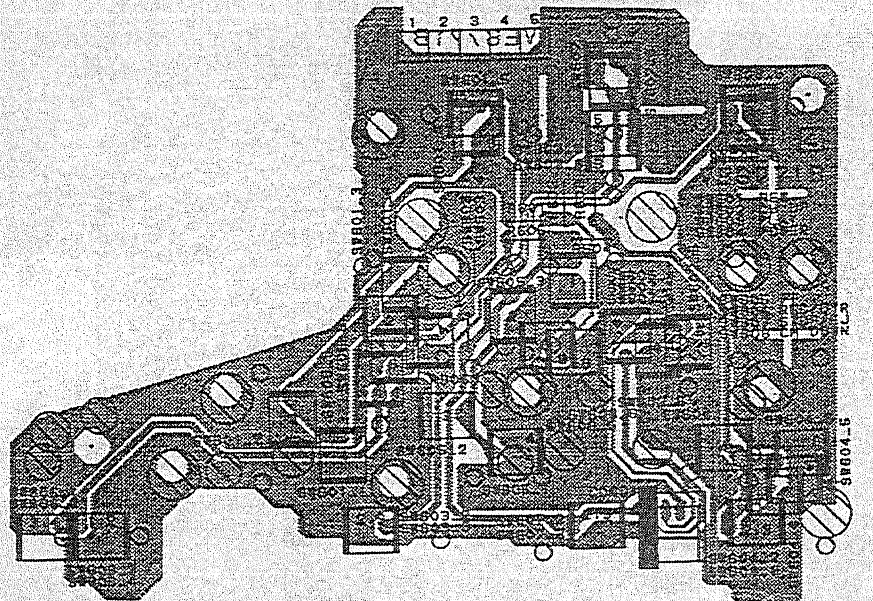

V651 FV686GA
27
19
16
6
31
30
2
1
CH. UP
CH. DOWN
STOP/EJECT
REC/OTR
FF/CUE
POWER
PLAY
REW/REV
OS651
1
HEATER DC +
HEATER DC -
P1
P11
1G
9G
REMOCON
CH. UP SW
KEY-A
SYSCON/SERVO

POWER BLOCK DIAGRAM


IC501 NJM431L
VOLTAGE CTL.
1
2
Q511
PHOTO COUPLER
T501
Q513
30V REG
7
1
11
3
13
14
Q506
P. OUT PUT
Q503
SW.
D504
3
1
L501
AC IN
Q509
P.CON 5V SW
Q505
P.ON SW
P. CON 5V
POWER ON H
Q501
P.CON 9V SW
Q504
P. ON SW
P. CON 9V
SYSCON/SERVO
POWER FAIL
HEATER DC +
HEATER DC -

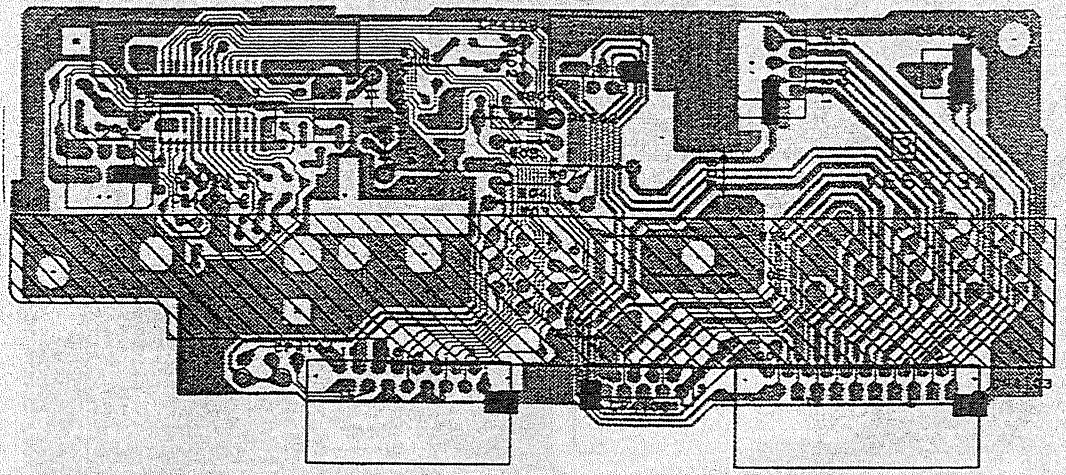
PRINTED CIRCUIT BOARDS

OPERATION

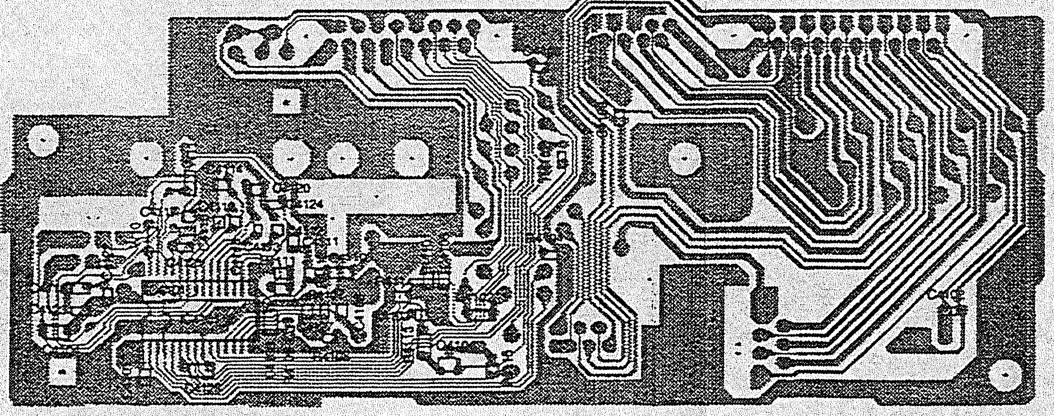


HEAD AMP

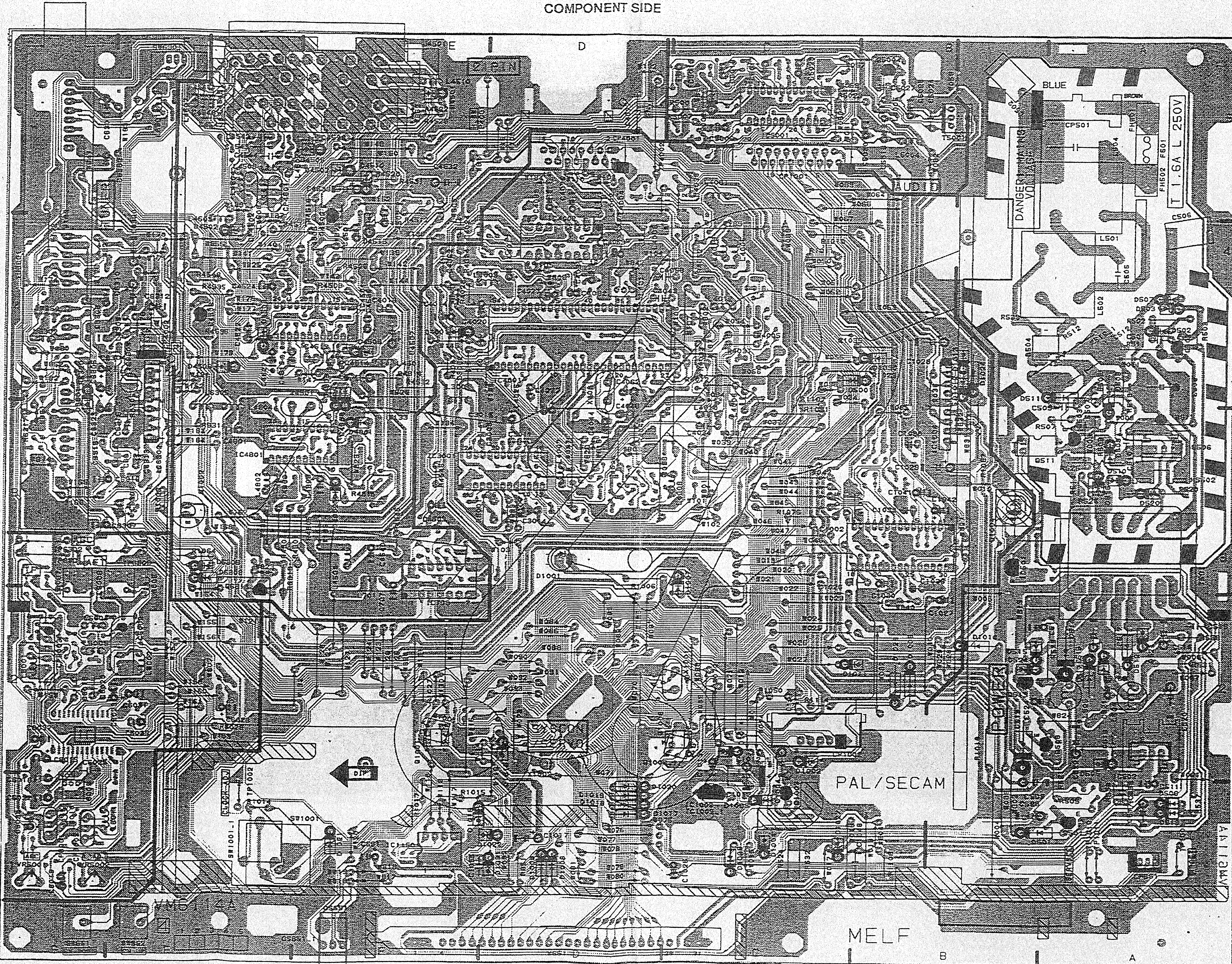
COMPONENT SIDE



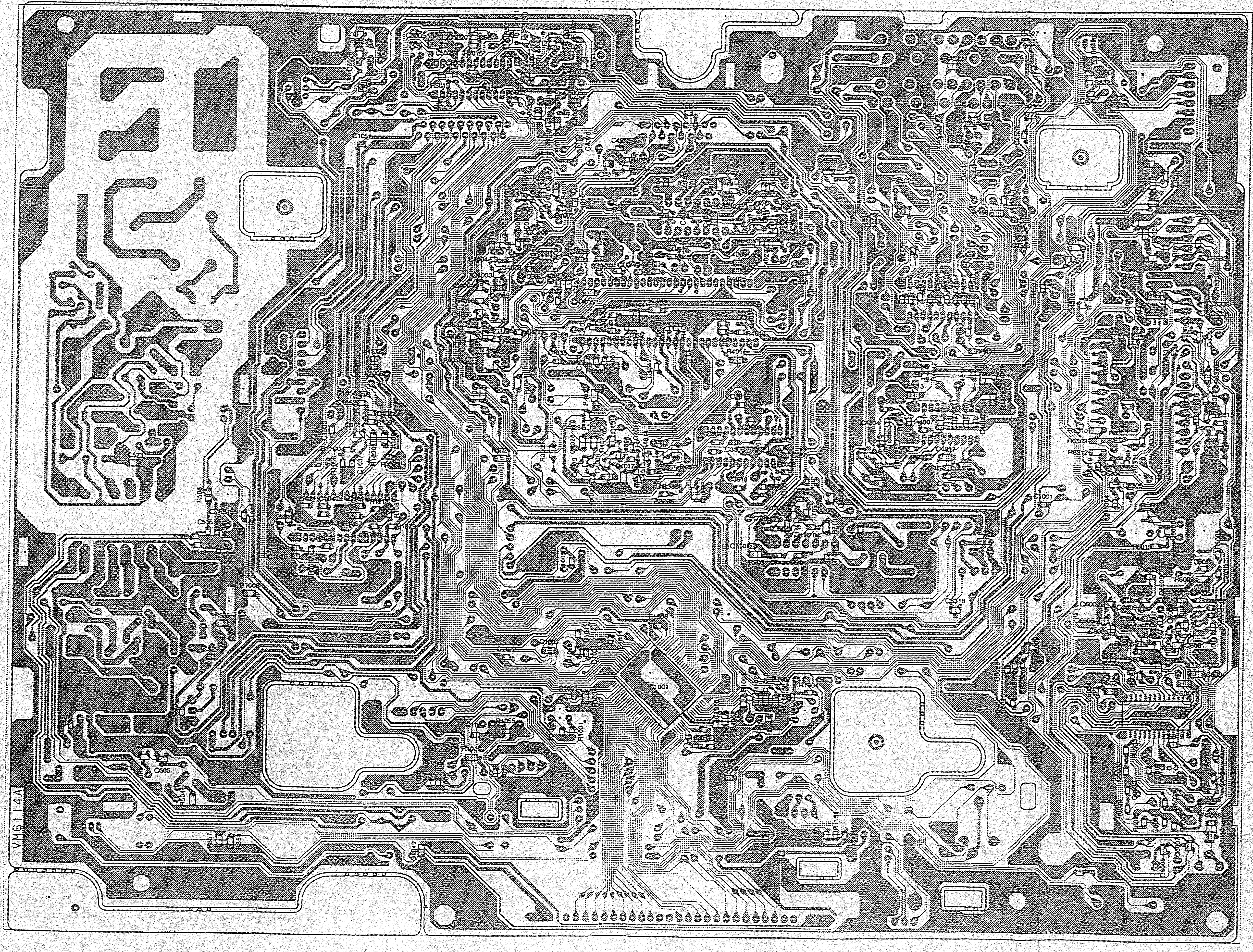
SOLDER SIDE



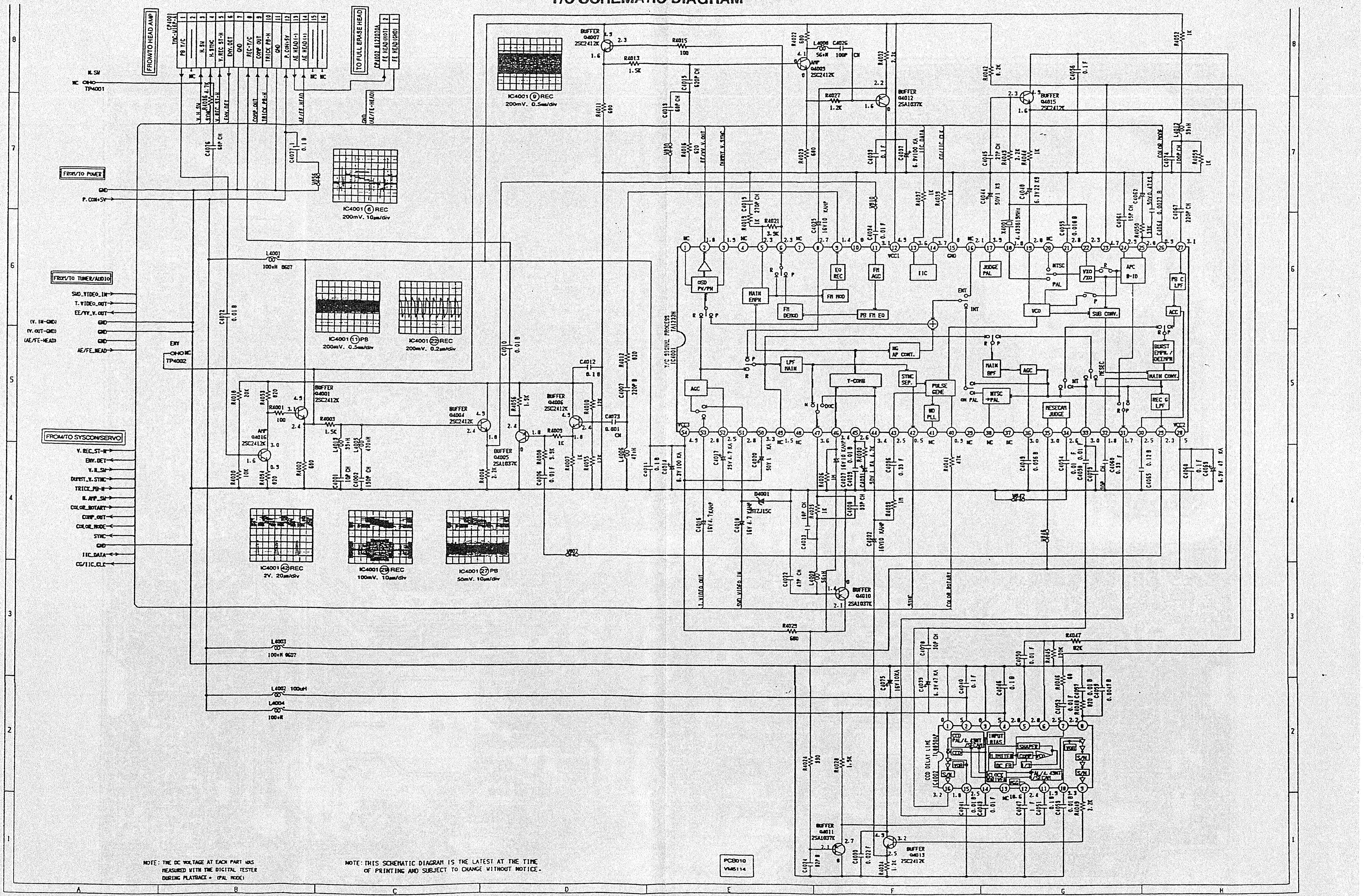
PRINTED CIRCUIT BOARDS
MAIN
COMPONENT SIDE


E
D
B
A
BLUE
CP501
DANGER
T 1.6A L 250V
C506
L501
L502
AUDIO
POWER
PAL/SECAM
MELF
IC4801
D1001
SW1001
R1015
TP1002

PRINTED CIRCUIT BOARDS
MAIN
SOLDER SIDE



Y/C SCHEMATIC DIAGRAM



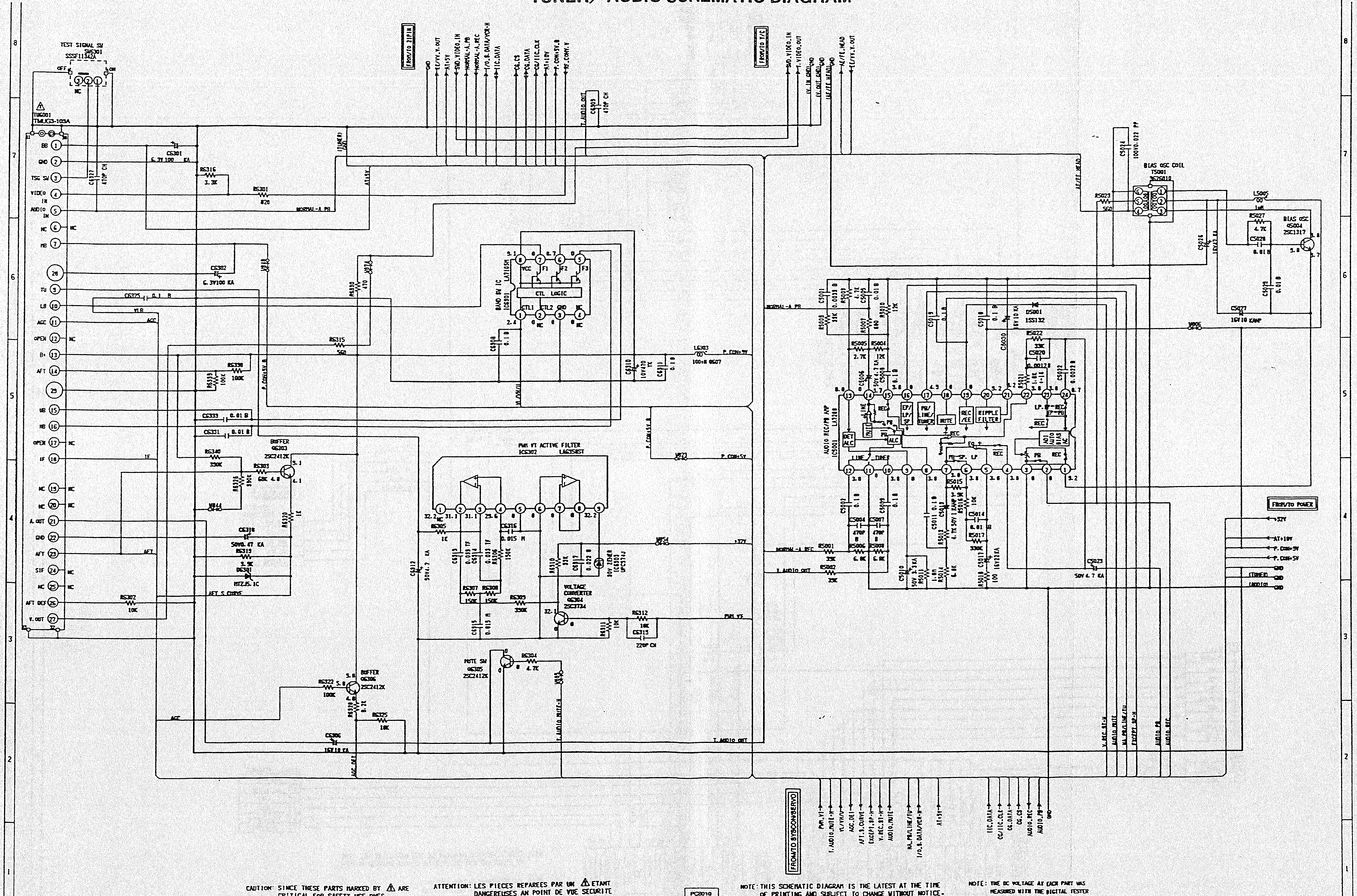
FROM/TO HEAD AMP
CP4001
TO FULL ERASE HEAD
CP4002
FE HEAD(HOT)
FE HEAD(GND)
PB Y/C
H.SW
H.SYNC
V.REC ST-H
ENV.DET
GND
REC-Y/C
COMP OUT
TRICK PB-H
GND
P.CON+5V
AE HEAD(-)
AE HEAD(+)
NC
TP4001
FROM/TO POWER
GND
P.CON+5V
FROM/TO TUNER/AUDIO
SWD_VIDEO_IN
T.VIDEO_OUT
EE/VV_V.OUT
GND
AE/FE_HEAD
ENV
TP4002
FROM/TO SYSCON/SERVO
V.REC_ST-H
ENV.DET
V.H_SW
DUMMY_V.SYNC
TRICK_PB-H
H.AMP_SW
COLOR_ROTARY
COMP_OUT
COLOR_MODE
SYNC
GND
IIC_DATA
CC/IIC_CLK
IC4001 ⑨ REC
200mV, 0.5ms/div
IC4001 ⑥ REC
200mV, 10μs/div
IC4001 ⑪ PB
200mV, 0.5ms/div
IC4001 ㉒ REC
200mV, 0.2ms/div
IC4001 ㊷ REC
2V, 20μs/div
IC4001 ㉘ REC
100mV, 10μs/div
IC4001 ㉗ PB
50mV, 10μs/div
BUFFER Q4001 2SC2412K
AMP Q4016 2SC2412K
BUFFER Q4004 2SC2412K
BUFFER Q4005 2SA1037K
BUFFER Q4006 2SC2412K
BUFFER Q4007 2SC2412K
AMP Q4005 2SC2412K
BUFFER Q4012 2SA1037K
BUFFER Q4015 2SC2412K
BUFFER Q4010 2SA1037K
BUFFER Q4011 2SA1037K
BUFFER Q4013 2SC2412K
L4001 100μH
L4002 100μH
L4003 100μH
L4004 100μH
Y/C SIGNAL PROCESS IC4001 TA1232N
OSD PV/PH
MAIN EMPH
FM DEMOD
EQ REC
FM MOD
FM AGC
PB FM EQ
IIC
JUDGE PAL
NTSC
PAL
VXO /XO
APC B-ID
VCO
SUB CONV.
PB C LPF
ACC
BURST EMPH./ DEEMPH
MAIN CONV.
REC C LPF
NG AP CONT.
LPF MAIN
Y-COMB
SYNC SEP.
PULSE GENE
HD PLL
AGC
MAIN BPF
NTSC →PAL
SECAM JUDGE
EXT
INT
D4001 MTZJ15C
1_VIDEO_OUT
SWD_VIDEO_IN
SYNC
COLOR ROTARY
CCD DELAY LINE IC1002 TC9050P
INPUT BIAS
PAL/L.CONT /SECAM
SHAPER
LIMITER
COMP
VCO
DC FB
CLOCK DRIVER
VGG
S/H
VDD
VBB
VCC1
VCC2
GND

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK + (PAL MODE)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010
VM5114

TUNER／AUDIO SCHEMATIC DIAGRAM


TEST SIGNAL SW
SW6301
SSSF11342A
TU6001
TMUG3-103A
FROM/TO 21PIN
FROM/TO Y/C
BAND SW IC
IC6301
LA7105M
CTL LOGIC
PWM VT ACTIVE FILTER
IC6302 LA6358ST
BUFFER
Q6303
2SC2412K
VOLTAGE CONVERTER
Q6304
2SC3734
MUTE SW
Q6305
2SC2412K
BUFFER
Q6306
2SC2412K
AUDIO REC/PB/AMP
IC5001
LA7288
BIAS OSC COIL
T5001
BIAS OSC
Q5004
2SC1317
D5001
1SS132
FROM/TO POWER
FROM/TO SYSCON/SERVO
NORMAL-A PB
NORMAL-A REC
T.AUDIO OUT
P.CON+5V
AGC
AFT
AFT S.CURVE
PWM.VT
AGC.DET
AUDIO.PB
AUDIO.REC
GND

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

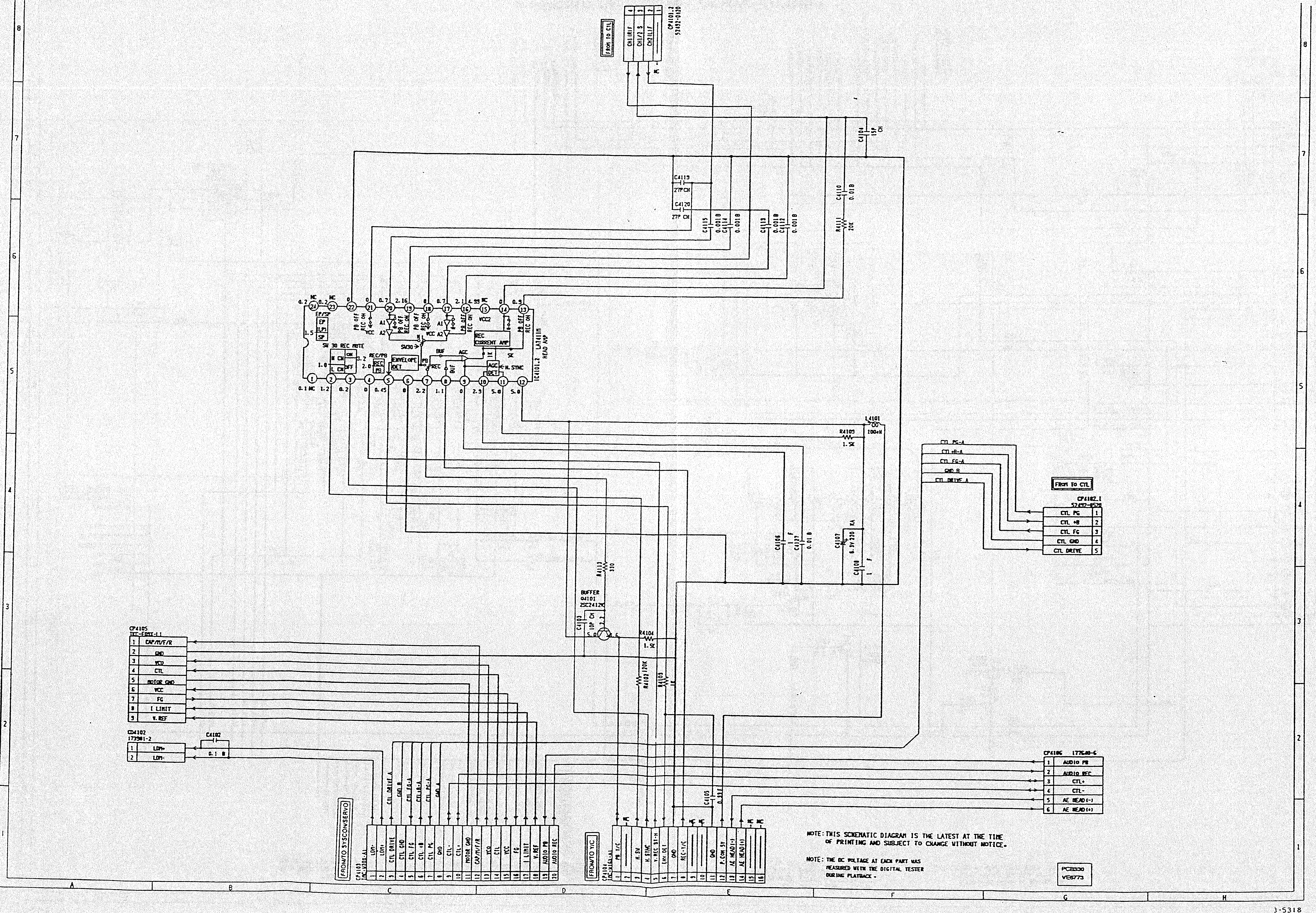
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB010
VM6114

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

HEAD AMP SCHEMATIC DIAGRAM

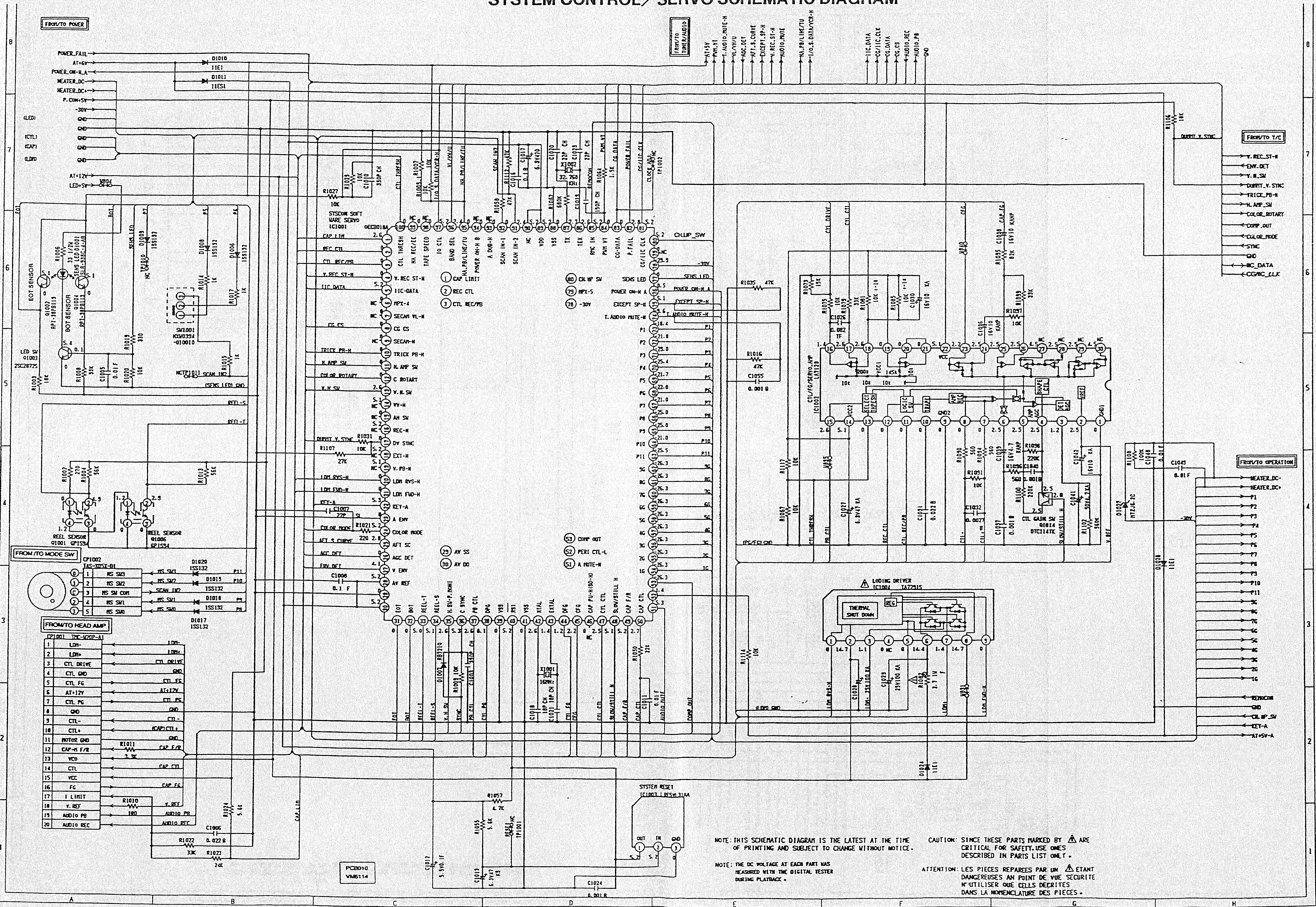

FROM TO CYL
CP4101.2
52492-0420
CH1(R)F
CH1/2 S
CH2(L)F
NC
C4104
15P
CH
C4119
27P CH
C4120
27P CH
C4115
0.001B
C4114
0.001B
C4113
0.001B
C4112
0.001B
C4110
0.01B
R4111
20K
IC4101.2
LA7411M
HEAD AMP
EP/SP
EP
(LP)
SP
SW 30 REC MUTE
H CH
L CH
ON
OFF
REC/PB
REC
PB
ENVELOPE
DET
SW30
BUF
AGC
REC
CURRENT AMP
AGC
DET
H. SYNC
1K
5K
PB OFF
REC ON
VCC
VCC2
A1
A2
L4101
100uH
R4109
1.5K
C4106
1 F
C4127
0.01B
C4107
6.3V 220
KA
C4108
1 F
R4113
330
BUFFER
Q4101
2SC2412K
C4103
10P CH
R4104
1.5K
R4102 120K
R4103
1K
CTL PG-A
CTL +B-A
CTL FG-A
GND B
CTL DRIVE A
FROM TO CTL
CP4102.1
52492-0520
CTL PG 1
CTL +B 2
CTL FG 3
CTL GND 4
CTL DRIVE 5
CP4105
TKC-E09X-11
1 CAP/M/F/R
2 GND
3 VCO
4 CTL
5 MOTOR GND
6 VCC
7 FG
8 I LIMIT
9 V. REF
CD4102
173981-2
1 LDM+
2 LDM-
C4102
0.1 B
CP4106 177640-6
1 AUDIO PB
2 AUDIO REC
3 CTL+
4 CTL-
5 AE HEAD(-)
6 AE HEAD(+)
FROM/TO SYSCON/SERVO
CP4103
TKC-V20X-A1
1 LDM-
2 LDM+
3 CYL DRIVE
4 CYL GND
5 CYL FG
6 CYL +B
7 CYL PG
8 GND
9 CTL+
10 CTL-
11 MOTOR GND
12 CAP/M/F/R
13 VCO
14 CTL
15 VCC
16 FG
17 I LIMIT
18 V.REF
19 AUDIO PB
20 AUDIO REC
CYL DRIVE A
GND B
CYL FG-A
CYL +B-A
CYL PG-A
GND A
FROM/TO Y/C
CP4101
TKC-V16X-A1
1 PB Y/C
3 H.SW
4 H.SYNC
5 V.REC ST-H
6 ENV. DET
7 GND
8 REC-Y/C
11 GND
12 P.CON 5V
13 AE HEAD(-)
14 AE HEAD(+)
C4105
0.01F
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.

PCB330
VE6773

SYSTEM CONTROL／SERVO SCHEMATIC DIAGRAM


FROM/TO POWER
POWER_FAIL
AT+6V
POWER_ON-H_A
HEATER_DC-
HEATER_DC+
P.CON+5V
-30V
GND
(LED)
(CTL)
(CAP)
(LDM)
AT+12V
LED+5V
D1010
11E1
D1011
11ES1
FROM/TO TUNER/AUDIO
FROM/TO T/C
V.REC_ST-H
ENV.DET
V.H_SW
DUMMY_V.SYNC
TRICK_PB-H
H.AMP_SW
COLOR_ROTARY
COMP.OUT
COLOR_MODE
SYNC
GND
IIC_DATA
CG/IIC_CLK
EOT SENSOR
Q1002
RPT-38PB113
BOT SENSOR
Q1004
LED SW
Q1003
2SC2872S
SENS LED D1001
SW1001
REEL SENSOR
Q1001 GP1S94
REEL SENSOR
Q1006
GP1S94
FROM/TO MODE SW
CP1002
MS SW3
MS SW2
MS SW COM
MS SW1
MS SW0
FROM/TO HEAD AMP
CP1001
LDM-
LDM+
CTL DRIVE
CTL GND
CTL FG
AT+12V
CTL PG
GND
CTL-
CTL+
MOTOR GND
CAP-M F/R
VCO
CTL
VCC
FG
I LIMIT
V. REF
AUDIO PB
AUDIO REC
SYSCON SOFT WARE SERVO
IC1001
CXP80118A
CAP LIMIT
REC CTL
CTL REC/PB
V.REC ST-H
IIC-DATA
MPX-4
SECAM VL-H
CG CS
SECAM-H
TRICK PB-H
H.AMP SW
C ROTART
V.H.SW
VV-H
AH SW
REC-H
DY SYNC
EXI-H
V.PB-H
LDM RVS-H
LDM FWD-H
KEY-A
A ENV
COLOR MODE
AFT SC
AGC DET
V ENV
AV REF
CH.UP SW
SENS LED
POWER ON-H A
EXCEPT SP-H
T.AUDIO MUTE-H
AV SS
AV DD
COMP OUT
PERI CTL-L
A MUTE-H
X1001
16MHz
32.768 KHz
CTL/FG/SERVO AMP
IC1002
LA7129
THERMAL SHUT DOWN
REG
LOADING DRIVER
IC1004 TA7291S
CTL GAIN SW
Q1014
DTC114TK
FROM/TO OPERATION
REMOCON
CH.UP_SW
KEY-A
AT+5V-A
SYSTEM RESET
IC1003 L.RESb13AA
OUT
IN
GND
PCB010
VMS114

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

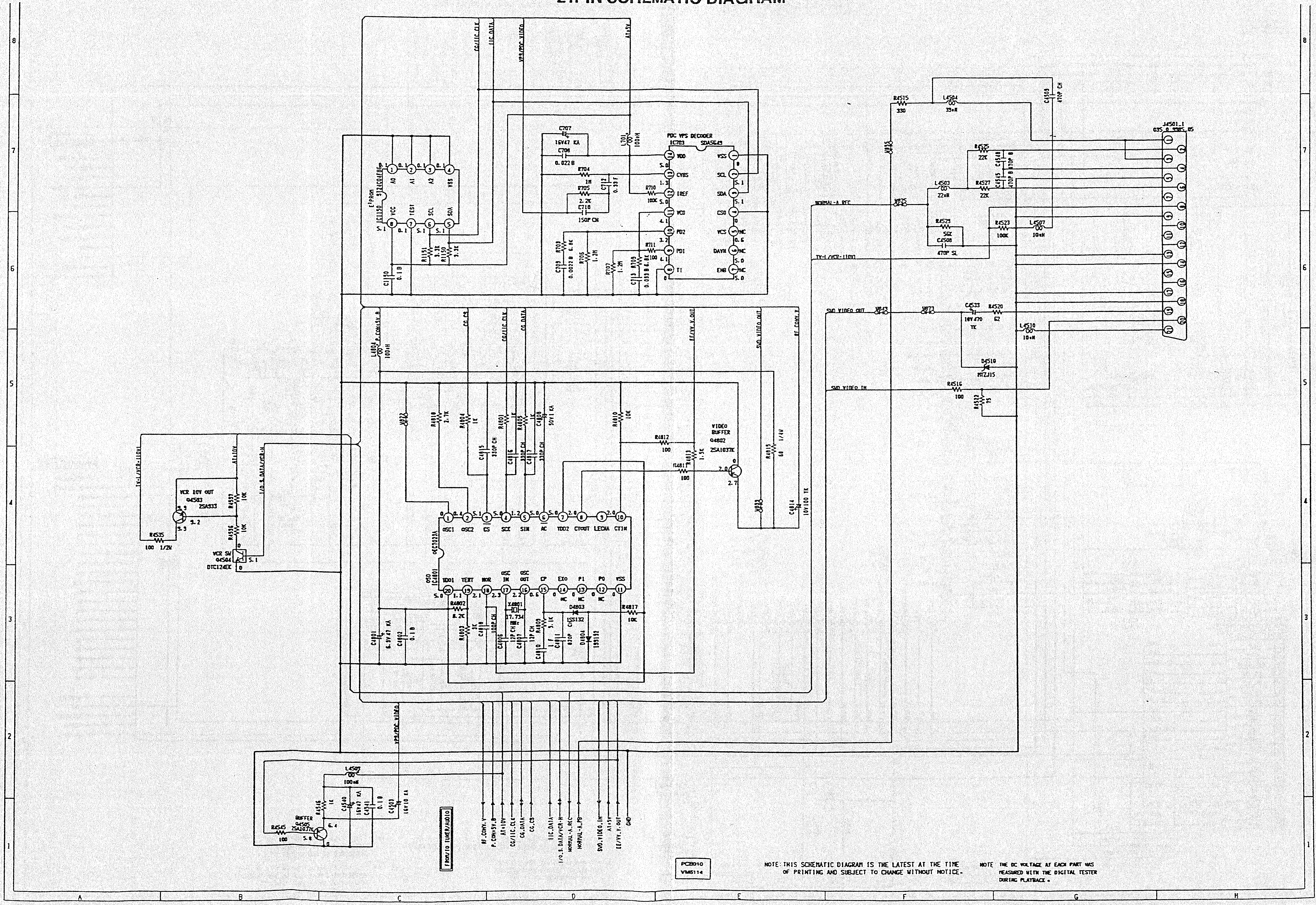
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

3-5341

21PIN SCHEMATIC DIAGRAM

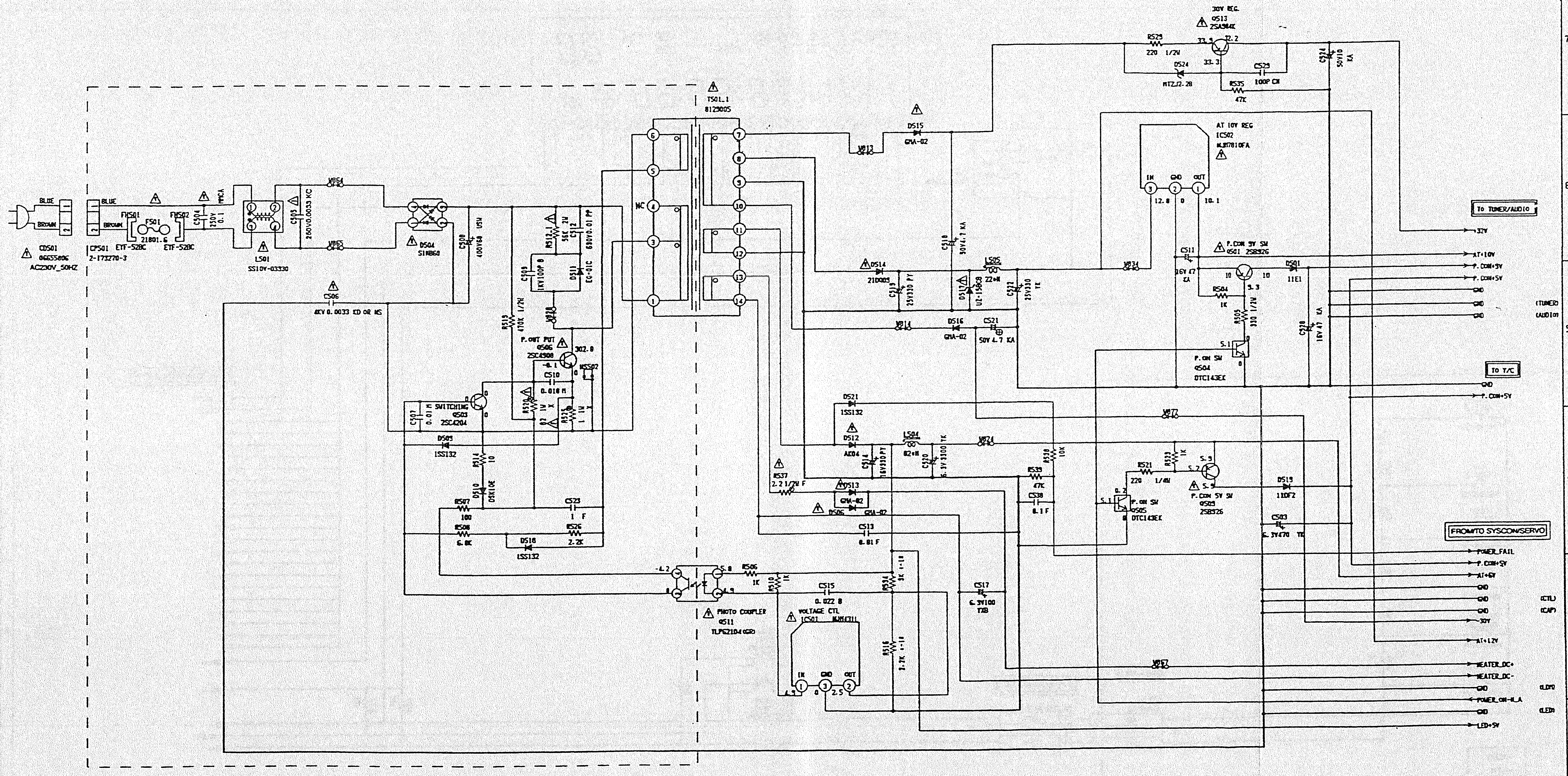


CG/IIC.CLK
IIC.DATA
VPS/PDC VIDEO
AT+5V
E²PROM
IC1150
ST24C01FB6
A0
A1
A2
VSS
VCC
TEST
SCL
SDA
R1151 3.3K
R1150 3.3K
C1150 0.1 B
C707 16V47 KA
C708 0.022 B
R704 1M
R705 2.2K
C710 150P CH
C712 0.33 F
L701 100uH
R710 100K
R711 100
PDC VPS DECODER
IC703 SDA5649
VDD
CVBS
IREF
VCO
PD2
PD1
TI
VSS
SCL
SDA
CSO
VCS
DAVN
ENB
NC
R703 6.8K
C709 0.0022 B
R706 1.2M
R707 1.2M
R709 6.8K
C713 0.033 B
P.CON+5V.B
L4804 100uH
CG.CS
CG/IIC.CLK
CG.DATA
EE/VV.V.OUT
SVO VIDEO OUT
RF CONV.V
V822
R4810 2.7K
R4804 1K
R4801 1K
R4805 1K
C4808 50V1 KA
C4815 330P CH
C4816 330P CH
C4817 330P CH
R4810 10K
R4812 100
R4813 1.5K
R4811 100
VIDEO BUFFER
Q4802
2SA1037K
R4815 68 1/4V
V838
C4814 10V100 YK
OSC1
OSC2
CS
SCK
SIN
AC
VDD2
CVOUT
LECHA
CVIN
OSD
IC4801
μPC7023A
VDD1
TEXT
HOR
OSC IN
OSC OUT
CP
EXO
P1
P0
VSS
R4802 8.2K
R4803 3K
C4810 100P CH
X4801 17.734 MHz
C4806 12P CH
C4807 12P CH
R4809 5.1K
C4810 1 F
C4811 820P
D4803 1SS132
D4804 1SS132
R4817 10K
C4801 6.3V47 KA
C4802 0.1 B
TV-1/VCR-110V1
AT+10V
I/O.S.DATA/VCR-H
VCR 10V OUT
Q4503
2SA933
R4557 10K
R4556 10K
R4535 100 1/2W
VCR SW
Q4504
DTC124EK
L4505 100uH
R4546 1K
C4540 16V47 KA
C4541 0.1 B
C4503 16V10 KA
BUFFER
Q4505
2SA1037K
R4545 100
FROM/TO TUNER/AUDIO
RF.CONV.V
P.CON+5V.B
AT+10V
CG/IIC.CLK
CG.DATA
CG.CS
IIC.DATA
I/O.S.DATA/VCR-H
NORMAL-A.REC
NORMAL-A.PB
SVO.VIDEO.IN
AT+5V
EE/VV.V.OUT
GND
R4515 330
L4504 39uH
C4509 470P CH
V835
R4525 22K
C4548 470P B
C4545 470P B
L4503 22uH
R4527 22K
NORMAL-A REC
V825
R4529 56K
C4508 470P SL
R4523 100K
L4507 10uH
TV-1/VCR-110V1
SVO VIDEO OUT
V843
V873
C4533 10V470 YK
R4520 62
L4510 10uH
D4510 MTZJ15
SVO VIDEO IN
R4516 100
R4522 75
J4501_1
035_0_9385_05
PCB010
VM5114
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

POWER SCHEMATIC DIAGRAM


BLUE
BROWN
CD501
AC230V_50HZ
CP501
2-173270-3
FH501
F501
21801.6
FH502
ETF-52BC
C504
250V 0.1
L501
SS10V-03330
C505
250V0.0033 KC
W864
W865
D504
S1NB60
C506
4KV 0.0033 KD OR KS
C508
400V68 VSU
R519
470K 1/2W
C509
1KV100P B
D511
EG-01C
R512
56K 2W
C512
630V0.01 PP
P.OUT PUT
Q506
2SC4908
302.8
C510
0.010 M
SWITCHING
Q503
2SC4204
C507
0.01 M
R522
R513
D505
1SS132
R514
10
D510
05K10E
R507
100
R508
6.8K
C523
1 F
R526
2.2K
D518
1SS132
T501.1
8129005
NC
D515
GMA-02
W813
D514
21DQ05
C519
25V330 PY
C518
50V4.7 KA
D517
UZ-15BSB
L505
22uH
C522
25V330 TK
W814
D516
GMA-02
C521
50V 4.7 KA
D521
1SS132
D512
AK04
C514
16V330 PY
L504
82uH
C520
6.3V3300 TK
W824
R537
2.2 1/2W F
D513
GMA-02
D506
GMA-02
C513
0.01 F
-4.2
5.8
4.9
R506
1K
R510
1K
PHOTO COUPLER
Q511
TLP621D4(GR)
C515
0.022 B
VOLTAGE CTL
IC501
R534
R518
IN
GND
OUT
4.9
2.5
C517
6.3V100 TXB
30V REG.
Q513
2SA984K
R525
220 1/2W
33.5
32.2
33.3
D524
MTZJ2.2B
C525
100P CH
R535
47K
C524
50V10 KA
AT 10V REG
IC502
NJM7810FA
12.8
0
10.1
C511
16V 47 EA
P.CON 5V SW
Q501
2SB926
10
D501
11E1
R504
1K
R505
330 1/2W
C516
16V 47 KA
5.3
5.1
P.ON SW
Q504
DTC143EX
W834
W877
R530
10K
R535
47K
C538
0.1 F
R521
220 1/4W
R523
1K
5.9
5.7
5.1
P.ON SW
Q505
DTC143EX
P.CON 5V SW
Q505
2SB926
D519
11DF2
C503
6.3V470 TK
W867
TO TUNER/AUDIO
32V
AT+10V
P.CON+5V
P.CON+5V
GND
GND
GND
(TUNER)
(AUDIO)
TO T/C
GND
P.CON+5V
FROM/TO SYSCON/SERVO
POWER_FAIL
P.CON+5V
AT+6V
GND
GND
GND
(CTL)
(CAP)
-30V
AT+12V
HEATER_DC+
HEATER_DC-
GND
POWER_ON-H_A
GND
LED+5V
(LDP)
(LED)

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

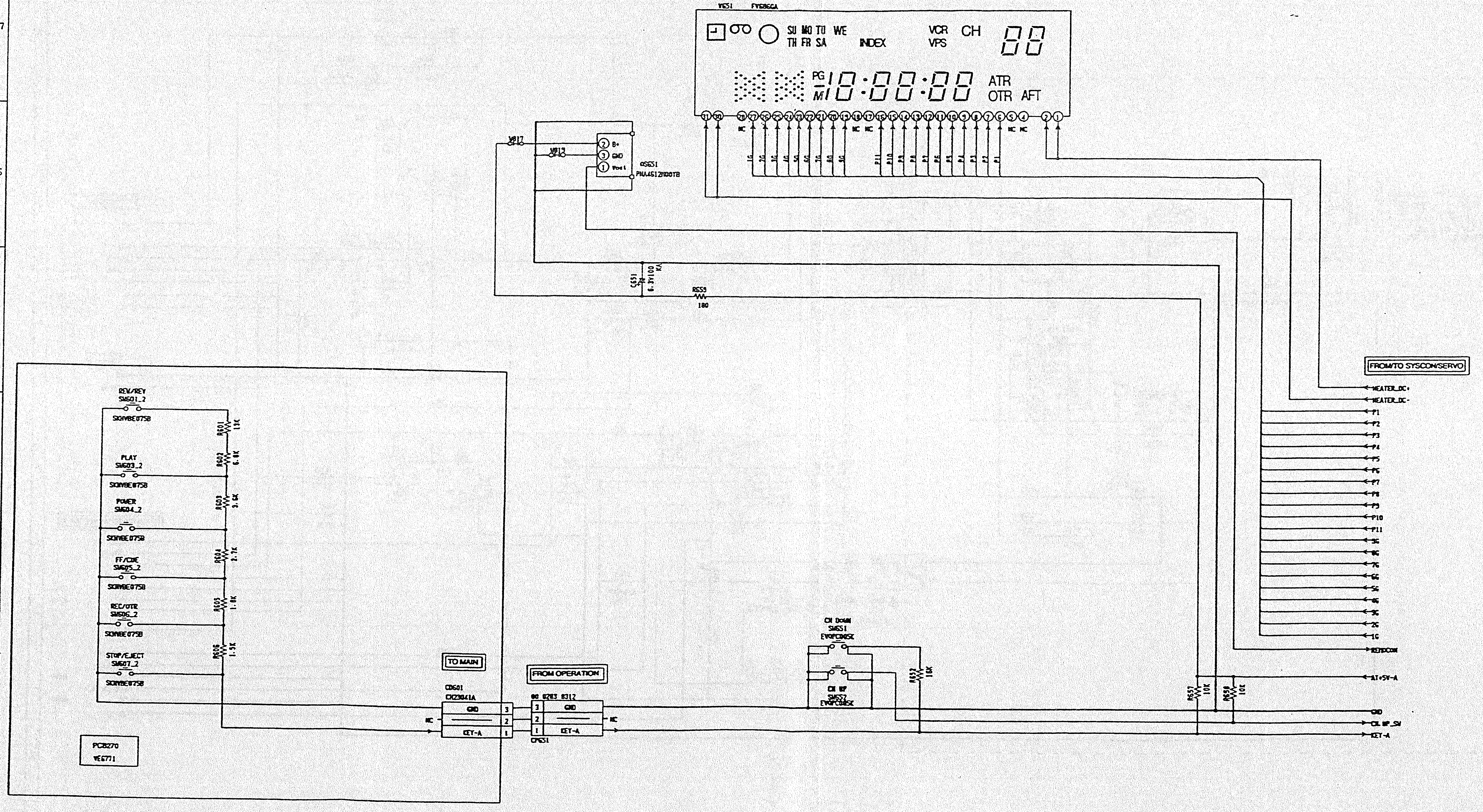
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010
VM5114

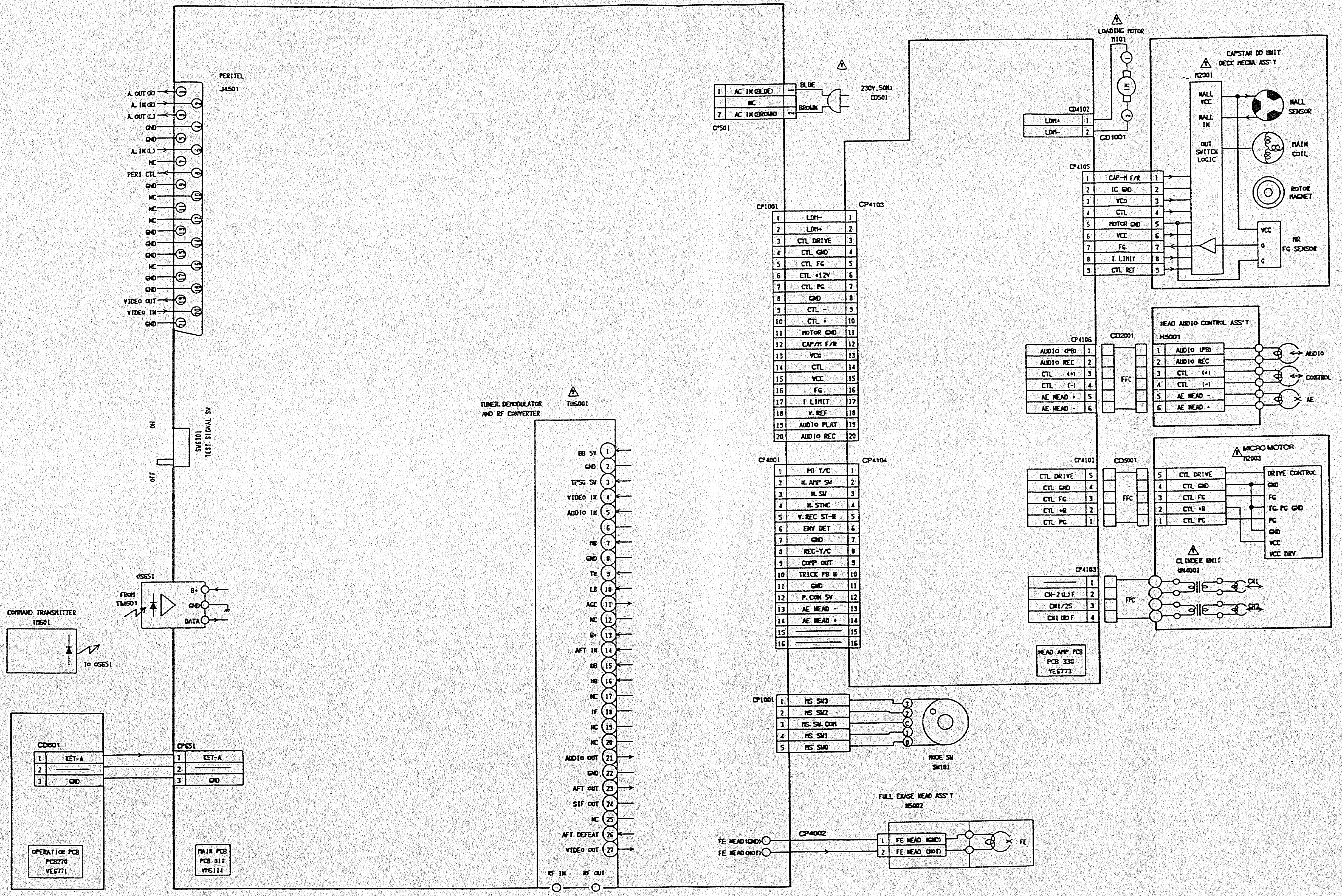
OPERATION SCHEMATIC DIAGRAM


V651 FVG86GA
SU MO TU WE
TH FR SA
INDEX
VCR
VPS
CH
PG
M
ATR
OTR AFT
31 30 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 2 1
NC
NC NC
NC NC
1G 2G 3G 4G 5G 6G 7G 8G 9G
P11 P10 P9 P8 P7 P6 P5 P4 P3 P2 P1
W817
W819
2 B+
3 GND
1 Vout
QS651
PNA4612M00YB
C651
6.3V100
KA
R653
180
FROM/TO SYSCON/SERVO
HEATER_DC+
HEATER_DC-
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
9G
8G
7G
6G
5G
4G
3G
2G
1G
REMOCON
AT+5V-A
GND
CH UP_SW
KEY-A
CH DOWN
SW651
EVQPC005K
CH UP
SW652
EVQPC005K
R652
18K
R657
10K
R658
10K
REW/REV
SW601_2
SKHVBE075B
R601
13K
PLAY
SW603_2
SKHVBE075B
R602
6.8K
POWER
SW604_2
SKHVBE075B
R603
3.6K
FF/CUE
SW605_2
SKHVBE075B
R604
2.7K
REC/OTR
SW606_2
SKHVBE075B
R605
1.8K
STOP/EJECT
SW607_2
SKHVBE075B
R606
1.5K
TO MAIN
CD601
CK23041A
GND
KEY-A
NC
3 2 1
FROM OPERATION
00 0283 0312
CP651
PCB270
VE6771

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PCB010
VM5114

INTERCONNECTION DIAGRAM

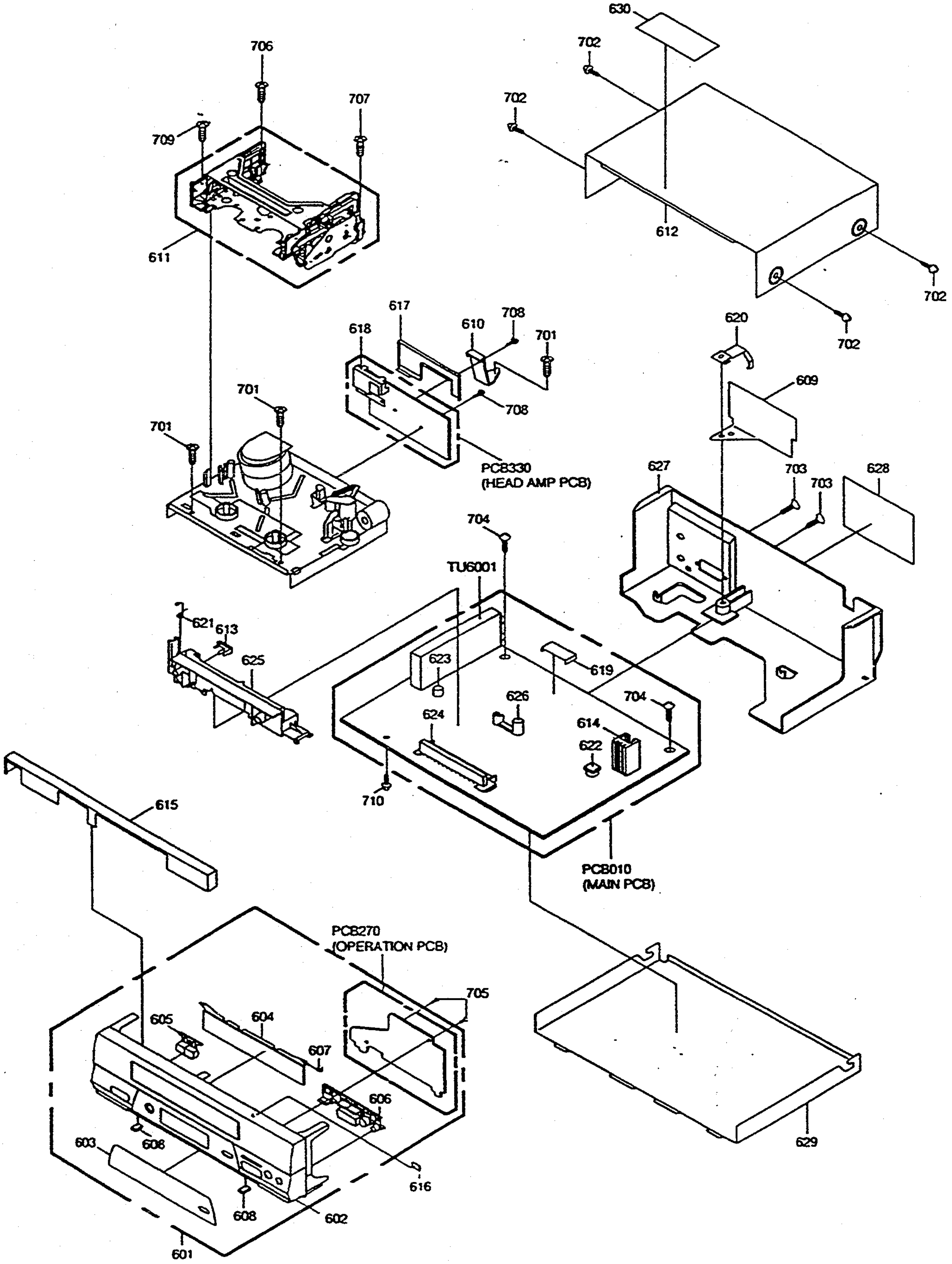

PERITEL
J4501
A. OUT (R)
A. IN (R)
A. OUT (L)
GND
GND
A. IN (L)
NC
PERI CTL
GND
NC
NC
NC
GND
GND
GND
NC
GND
GND
VIDEO OUT
VIDEO IN
GND
ON
OFF
SW6101
TEST SIGNAL SW
COMMAND TRANSMITTER
TM601
To OS651
FROM
TM601
OS651
B+
GND
DATA
CD601
KEY-A
GND
CP651
KEY-A
GND
OPERATION PCB
PCB270
VE6771
MAIN PCB
PCB 010
VM6114
TUNER DEMODULATOR
AND RF CONVERTER
TU6001
BB 5V
GND
TPSG SW
VIDEO IN
AUDIO IN
PB
GND
TB
LB
AGC
NC
B+
AFT IN
UB
HB
NC
IF
NC
NC
AUDIO OUT
GND
AFT OUT
SIF OUT
NC
AFT DEFEAT
VIDEO OUT
RF IN
RF OUT
CP501
AC IN (BLUE)
NC
AC IN (BROWN)
BLUE
BROWN
230V_50Hz
CD501
CP1001
CP4103
LDM-
LDM+
CTL DRIVE
CTL GND
CTL FG
CTL +12V
CTL PG
GND
CTL -
CTL +
MOTOR GND
CAP/M F/R
VCO
CTL
VCC
FG
I LIMIT
V. REF
AUDIO PLAY
AUDIO REC
CP4001
CP4104
PB T/C
H. AMP SW
H. SW
H. SYNC
V. REC ST-H
ENV DET
GND
REC-T/C
COMP OUT
TRICK PB H
GND
P. CON 5V
AE HEAD -
AE HEAD +
CP1001
MS SW3
MS SW2
MS. SW. COM
MS SW1
MS SW0
MODE SW
SW101
FULL ERASE HEAD ASS'T
H5002
FE HEAD (GND)
FE HEAD (HOT)
CP4002
FE
LOADING MOTOR
M101
LM
CD4102
LDM+
LDM-
CD1001
CAPSTAN DD UNIT
DECK MECHA ASS'T
M2001
HALL VCC
HALL IN
OUT SWITCH LOGIC
HALL SENSOR
MAIN COIL
ROTOR MAGNET
MR FG SENSOR
VCC
O
G
CP4105
CAP-M F/R
IC GND
VCO
CTL
MOTOR GND
VCC
FG
I LIMIT
CTL RET
HEAD AUDIO CONTROL ASS'T
H5001
CP4106
CD2001
FFC
AUDIO (PB)
AUDIO REC
CTL (+)
CTL (-)
AE HEAD +
AE HEAD -
AE HEAD -
AE HEAD +
AUDIO
CONTROL
AE
MICRO MOTOR
M2003
CP4101
CD5001
FFC
CTL DRIVE
CTL GND
CTL FG
CTL +B
CTL PG
DRIVE CONTROL
GND
FG
FG. PG GND
PG
GND
VCC
VCC DRY
CYLINDER UNIT
UN4001
CP4103
CH-2 (L) F
CH1/2S
CH1 (R) F
FPC
CH1
CH2
HEAD AMP PCB
PCB 330
YE6773

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

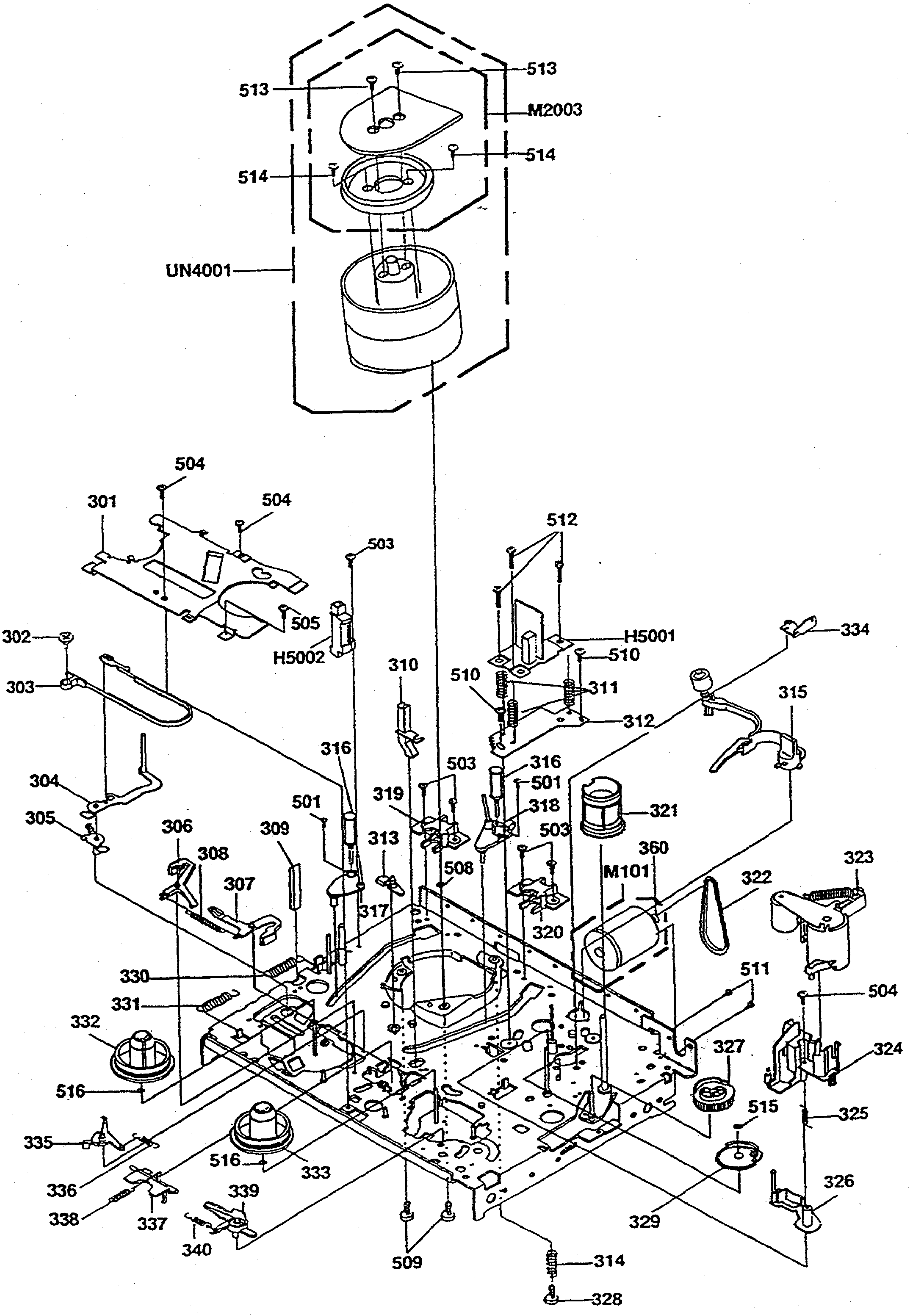
MECHANICAL EXPLODED VIEW


630
706
702
707
702
709
612
611
702
702
617
708
618
610
701
620
609
701
708
701
PCB330
(HEAD AMP PCB)
627
703
628
703
704
TU6001
621
613
625
623
619
626
704
624
614
622
615
710
PCB010
(MAIN PCB)
PCB270
(OPERATION PCB)
705
605
604
607
606
603
608
616
629
608
602
601

MECHANICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
601	A484148720	CABINET.FRONT ASS'Y
602	701WPD0088	CABINET.FRONT
603	711WPD0421	PLATE.DISPLAY
604	712WPD0127	FLAP
605	735WPAA008	BUTTON.CHANNEL
606	735WPD0487	BUTTON.DECK
607	743WKAA001	SPRING.FLAP
608	800WFA0001	CUSHION.LEG
609	752WSA0108	SHIELD.HEAD AMP
610	762WSA0028	ANGLE.DECK BACK
611	850A900163	UNIT ASS'Y
612	702USS0023	CABINET.TOP
613	753WSA0103	SHIELD.DECK
614	----	HEAT SINK
615	761WSAA002	ANGLE.DECK
616	800WQ0A001	SHEET 18X15XT0.8
617	753WSA0095	SHIELD.CASE HEAD AMP
618	753WSA0094	SHIELD.COVER HEAD AMP
619	753WSA0098	PLATE.EARTH SYSCON
620	753WSA0099	PLATE.EARTH BOTTOM
621	743WKAA003	SPRING.FL EARTH
622	754WPA0015	COVER.LED(R)
623	754WPA0014	COVER.LED(L)
624	756WPAA001	HOLDER.CLOCK
625	761WPAA003	HOLDER.DECK
626	850P700031	HOLDER.LED
627	702WPA0377	PANEL.BACK
628	7222022320	SHEET.RATING
629	702WSA0033	PLATE.BOTTOM
630	7230006039	FILM.DECORATION
701	8117140A24	SCREW.TAPPING(BO) PAN 4*12
702	8117540A02	SCREW.TAPPING(BO) TRUSS 4*10
703	8117426802	SCREW.TAPPING(BO) OVAL 2.6*8
704	8107230604	SCREW.TAP TITE(S) BIND 3*6
705	8110226084	SCREW.TAP TITE(P) BIND 2.6*8
706	8107226604	SCREW.TAP TITE(S) BIND 2.6*6
707	8107226804	SCREW.TAP TITE(S) BIND 2.6*8
708	8107230804	SCREW.TAP TITE(S) BIND 3*8
709	8110630A04	SCREW.TAP TITE(P) BRAZIER 3*10
710	8110630804	SCREW.TAP TITE(P) BRAZIER 3*8
---	JB5X0300	POLYBAG
---	J3A20702	GUARANTEE CARD
---	J4841401	INSTRUCTION BOOK
---	J4B41407	QUICK SET UP SHEET
---	791UHA0005	GIFT SHEET
---	792UHA0083	PACKAGE
---	793UCD0957	GIFT BOX

CHASSIS EXPLODED VIEW (TOP VIEW)



513
513
M2003
514
514
UN4001
504
301
504
503
512
505
H5002
H5001
334
302
303
310
510
510
311
315
312
316
316
304
503
501
501
319
318
321
305
306
309
313
503
360
308
508
M101
323
307
317
322
320
330
511
504
331
332
327
324
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325
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516
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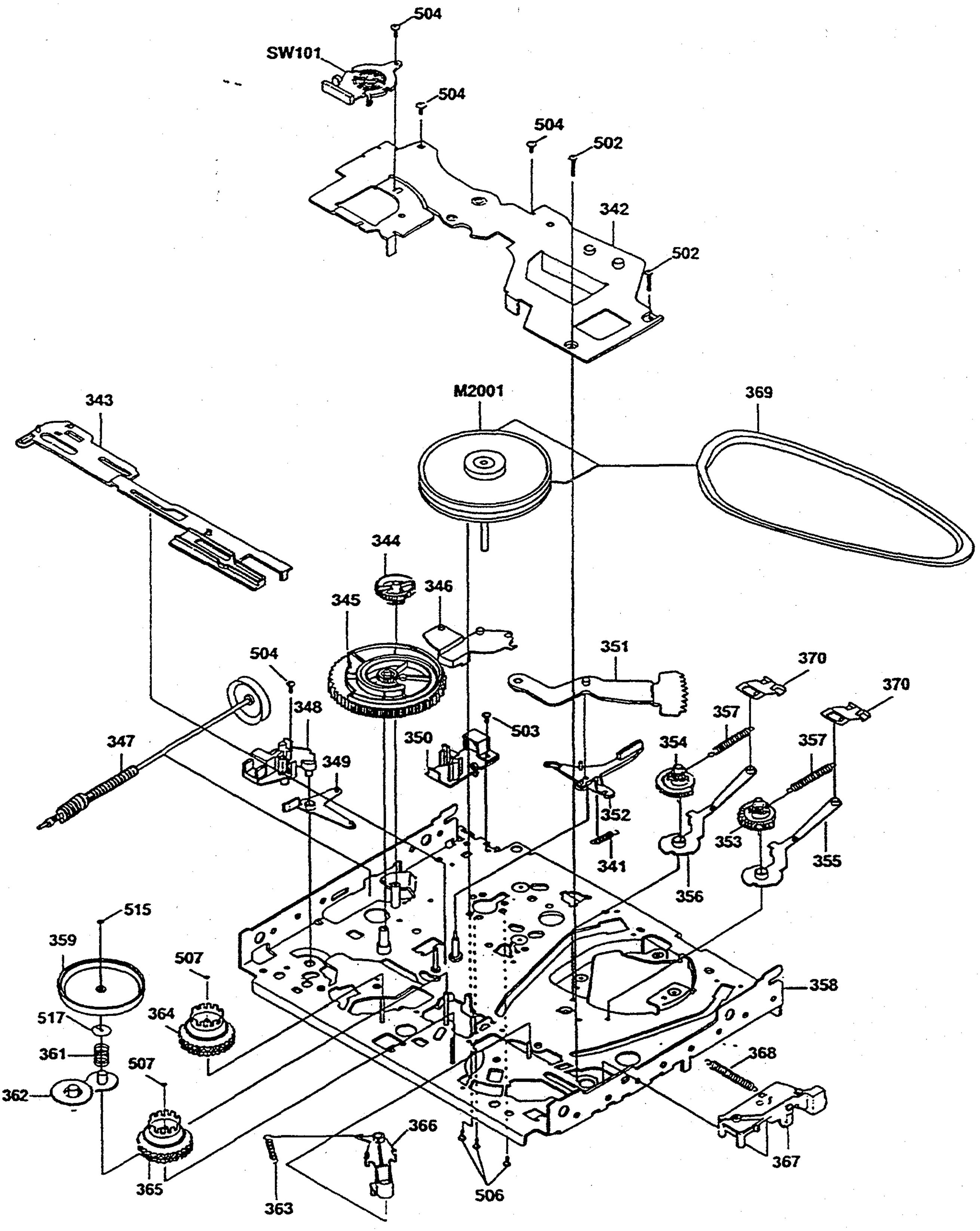
509
314
328

CHASSIS EXPLODED VIEW (BOTTOM VIEW)


504
SW101
504
504
502
342
502
343
M2001
369
344
346
345
504
351
370
370
348
357
357
347
350
503
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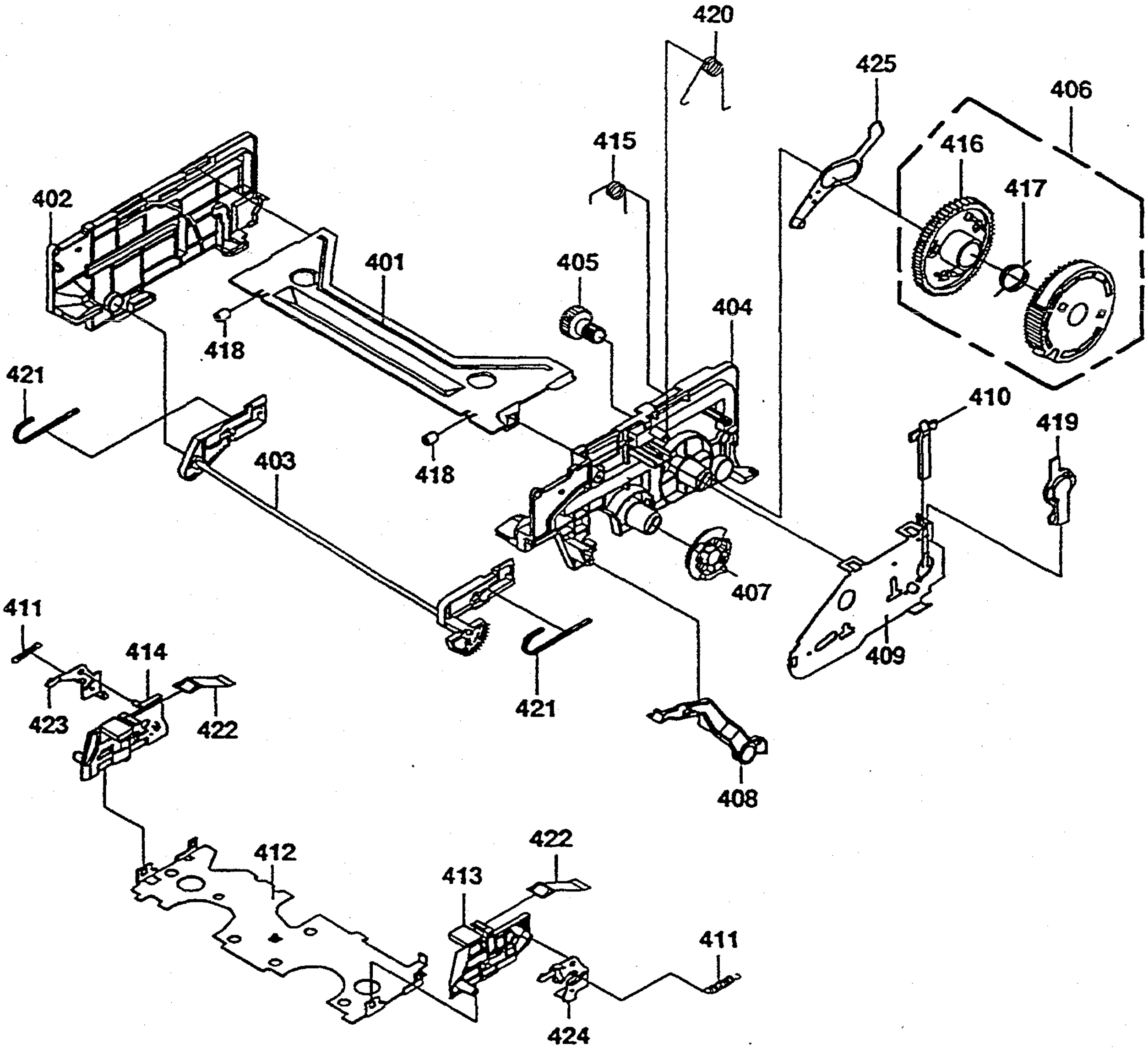
4-3401

UNIT ASS'Y EXPLODED VIEW


420
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414
421
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422
413
411
424

CHASSIS/UNIT ASS'Y REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
301	850P600471	BRACKET.BRAKE	401	850P900617	BRACKET.TOP
302	850P400358	ADJUST.TENSION	402	850P900607	BRACKET.SIDE L
303	850A400122	TENSION BAND.ASS Y	403	850A900165	LINK ASSY
304	850A400124	TENSION ARM ASS'Y	404	850P900615	BRACKET.SIDE R
305	850A400123	TENSION LEVER 2 ASS'Y	405	850P900601	GEAR.JOINT
306	850A600155	MAIN BRAKE S ASS'Y	406	850P900602	GEAR.CAM
307	850A600156	MAIN BRAKE T ASS'Y	407	850P900609	GEAR.LINK R
308	850P800252	SPRING.MAIN BRAKE	408	850P900618	LEVER.FLAP 2
309	850P900564	REFLECTOR.EOT	409	850P900616	BRACKET.SIDE R2
310	850P400411	REFLECTOR.LED 2	410	850P900621	REFLECTOR.BOT
311	850P800269	SPRING.AC HEAD	411	850P800296	SPRING.LOCKER
312	850P500060	BASE.AC HEAD	412	850P900611	CASS HOLDER
313	850P000394	POST.CASS GUIDE L	413	850P900613	CASS.SIDE R
314	850P800245	SPRING.AZIMUTH 2	414	850P900612	CASS.SIDE L
315	850A500013	AHC ASS'Y	415	850P800298	SPRING.BRACKET R
316	850A400102	GUIDE ROLLER ASS'Y	416	850P900608	GEAR.CLUTCH
317	850A400114	BASE.S INCLINED ASS'Y	417	850P800297	SPRING.CLUTCH
318	850A400115	BASE.T INCLINED ASS'Y	418	850P98A001	RUBBER.SILICON
319	850P400330	CATCHER.S	419	850P900620	COVER.SENSOR BOT
320	850P400332	CATCHER.T	420	850P800290	SPRING.EARTH
321	850P400343	CAM.PINCH.ROLLER	421	850P800294	SPRING.LINK
322	850P600487	BELT.LOADING	422	850P800299	SPRING.PACK
323	850A400117	PINCH ROLLER BLOCK	423	850P900605	LOCKER.L
324	850P900541	CASS.OPENER	424	850P900606	LOCKER.R
325	850P800264	SPRING.PS	425	850P900610	LEVER.BOT
326	850A400120	PS ARM ASS'Y			
327	850P400342	CAM GEAR	501	8110217401	SCREW.TAP TITE(P) BIND 1.7*4.0
328	8146230A14	JOINT SCREW BIND M3*11	502	8109226A64	SCREW.TAP TITE(B) BIND 2.6*16
329	850P400344	CAM.PS	503	8107226804	SCREW.TAP TITE(S) BIND 2.6*8
			504	8107226604	SCREW.TAP TITE(S) BIND 2.6*6
330	850P400356	SPRING.TENSION ARM 2	505	8107123604	SCREW.TAP TITE(S) PAN 2.3*6
331	850P400357	SPRING.TENSION ARM 1	506	8109126804	SCREW.TAP TITE(B) PAN 2.6*8
332	850P200216	REEL S	507	82P166005N	POLYSLIDER WASHER(CUT) 1.6*6.0*T0.5
333	850P200217	REEL T	508	82Q315483N	POLYSLIDER WASHER 3.1*5.4*T0.13
334	850P400402	CATCHER.PS 2	509	810A130604	SCREW/WASHER(A) M3*6
335	850P600465	SUB BRAKE S			
336	850P800253	SPRING.S-S BRAKE	510	810B126604	SCREW/WASHER(B) M2.6*6.0
337	850P200247	ARM.JOINT	511	8102130304	SCREW.PAN M3.0*3.0
338	850P800262	SPRING.JOINT ARM	512	8102126A04	SCREW.PAN M2.6*10
339	850A600157	SUB BRAKE T ASS'Y	513	810A123504	SEMS A M2.3*5.0
			514	850PAA0197	SCREW.MOTOR M3*5
340	850P800254	SPRING.T-S BRAKE	515	82P266005N	POLYSLIDER WASHER(CUT) 2.6*6.0*T0.5
341	850P800255	SPRING.CAP BRAKE	516	82Q264713N	POLYSLIDER WASHER 2.6*4.7*T0.13
342	850P600485	PLATE.BOTTOM	517	82P26A005N	POLYSLIDER WASHER(CUT) 2.6*10*T0.5
343	850A600176	ROD.MAIN ASS'Y			
344	850P400341	GEAR.MIDDLE	CD1001	068722058A	CORD EIS CONNECTOR 8722058A
345	850P600472	CAM.MAIN	CD2001	122W060803	CORD JUMPER 2W060803
346	850P600468	LEVER.MAIN BRAKE	CD5001	122L051501	CORD JUMPER 2L051501
347	850A600159	WORM ASS'Y			
348	850P600483	BRACKET.WORM F	H5001	1523D91029	HEAD AUDIO CONTROL HVMZA1254A
349	850P600474	LEVER.RATCHET	H5002	1543D02010	HEAD.FULL ERASE HVFHF0059A
350	850P600484	BRACKET.WORM R	⚠ M101	1596P48001	MOTOR.LOADING MXN-13FB09C
351	850P300151	LEVER.LOADING	⚠ M2001	1510398028	CAPSTAN DD UNIT F2QT827
352	850A600158	CAP BRAKE ASS'Y (S)	⚠ M2003	1589V11003	MICRO MOTOR EP13CC
353	850P300152	GEAR.LOADING S			
354	850P300153	GEAR.LOADING T	SW101	0520244003	MODE SWITCH SRZZ08068B
355	850A300053	LOADING ARM S ASS'Y			
356	850A300054	LOADING ARM T ASS'Y	⚠ UN4001	A4B4068500	CYLINDER UNIT ASS'Y A4B4068500
357	850P800263	SPRING.LOADING GEAR			
358	850A000173	MAIN CHASSIS ASS'Y			
359	850P200213	CENTER PULLEY			
360	850P600486	PULLEY.LDM 5			
361	850P800261	SPRING.C-PULLEY			
362	850A200065	ARM IDLER ASS'Y			
363	850P800270	SPRING.LEVER TENSION			
364	850A200064	CLUTCH GEAR T ASS'Y			
365	850A200063	CLUTCH GEAR S ASS'Y			
366	850P400360	LEVER.TENSION			
367	850P400359	HOLDER.TENSION			
368	850P800256	SPRING.MAIN ROD			
369	850P200215	BELT.CAPSTAN			
370	850P300150	SLIDER.LOADING			

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
RESISTORS		
⚠ R512	R3X28A563J	R.METAL OXIDE 56K OHM 2W
⚠ R520	R3X181820J	R.METAL OXIDE 82 OHM 1W
⚠ R525	R3X181010J	R.METAL OXIDE 1.0 OHM 1W
⚠ R537	R635U22R2J	R.FUSE 2.2 OHM 1/2W
R1005	R00106103J	RC 10K OHM 1/6W
R1021	R00106221J	RC 220 OHM 1/6W
⚠ R1087	R635812R7J	R.FUSE 2.7 OHM 1W
CAPACITORS		
⚠ C504	P2222B104K	CMP 0.1 UF 250V
⚠ C505	CA3PF0KL3M	CC 0.0033UF 250V
⚠ C506	CA30309L3M	CC 0.0033UF 4KV
C508	E02TFH680M	CE 68 UF 400V
C509	C0J0B0612K	CC 100 PF 1KV B
C512	P312F5103J	CPP 0.01 UF 630V
C520	E0ELF0332M	CE 3300 UF 6.3V
C1007	CHG0SL4H1J	CC 22 PF 50V SL
C4107	E0E300221M	CE 220 UF 6.3V
SEMICONDUCTORS		
D501	D28T011E10	DIODE.SILICON 11E1TA1B2
⚠ D504	D410S1NB60	DIODE S1NB60
⚠ D506	D13TGMA020	DIODE.SILICON GMA-02-BT
D509	D1VT001320	DIODE.SILICON 1SS132T-77
D510	D23TDSK10E	DIODE.RECTIFIER DSK10E-BT
D511	D28T0EG01C	DIODE.RECTIFER EG-01C
⚠ D512	D28T0AK040	DIODE.SCHOTTKY BARRIER AK04V0
⚠ D513	D13TGMA020	DIODE.SILICON GMA-02-BT
⚠ D514	D28T1DQ090	DIODE.RECTIFIER 21DQ09-TA2B1
⚠ D515	D13TGMA020	DIODE.SILICON GMA-02-BT
D516	D13TGMA020	DIODE.SILICON GMA-02-BT
⚠ D517	D9JT01501B	DIODE.ZENER UZ-15BCB-TA
D518	D1VT001320	DIODE.SILICON 1SS132T-77
D519	D28T11DF20	DIODE.SILICON 11DF2-TA2B2
D521	D1VT001320	DIODE.SILICON 1SS132T-77
D524	D97U02R21B	DIODE.ZENER MTZJ2.2B T-77
D1001	0001300030	LED SLR-938C-4-AB
D1006	D1VT001320	DIODE.SILICON 1SS132T-77
D1007	D1VTB72100	DIODE.SCHOTTKY RB721Q
D1008	D1VT001320	DIODE.SILICON 1SS132T-77
D1009	D1VT001320	DIODE.SILICON 1SS132T-77
D1010	D28T011E10	DIODE.SILICON 11E1TA1B2
D1011	D28T011ES1	DIODE.SILICON 11ES1TA1
D1017	D1VT001320	DIODE.SILICON 1SS132T-77
D1018	D1VT001320	DIODE.SILICON 1SS132T-77
D1019	D1VT001320	DIODE.SILICON 1SS132T-77
D1020	D1VT001320	DIODE.SILICON 1SS132T-77
D1024	D28T011E10	DIODE.SILICON 11E1TA1B2
D1027	D97U06R21C	DIODE.ZENER MTZJ6.2C T-77
D1028	D28T011E10	DIODE.SILICON 11E1TA1B2
D4001	D97U01501C	DIODE.ZENER MTZJ15C T-77
D4510	D97U015010	DIODE.ZENER MTZJ15 T-77
D4803	D1VT001320	DIODE.SILICON 1SS132T-77
D4804	D1VT001320	DIODE.SILICON 1SS132T-77
D5001	D1VT001320	DIODE.SILICON 1SS132T-77
D6301	D97U05R11C	DIODE.ZENER MTZJ5.1C T-77
⚠ IC501	10090431L0	IC NJM431L
⚠ IC502	100A97810F	IC NJM7810FA
IC703	13ED656490	IC SDA5649
IC1001	150F5B018A	IC OECB018A
IC1002	193J407123	IC LA7123
IC1003	1E1J031AA0	IC RE5VL31AA-TZC
⚠ IC1004	105S07291S	IC TA7291S
IC1150	1C3D0C04C0	IC ST24C04CB1
IC4001	105D31232N	IC TA1232N
IC4002	105D08850A	IC TL8850AP
IC4101	103FG7411M	IC LA7411M-TP-T
IC4801	196D07023A	IC OEC7023A
IC5001	103D772880	IC LA7288
IC6301	103F071050	IC LA7105M-TP-T1
IC6302	103S06358T	IC LA6358ST
IC6303	10M190574J	IC UPC574J-T
⚠ Q501	TBWT009260	TRANSISTOR.SILICON 2SB926(S.T)-AA
Q503	TC3T042040	TRANSISTOR.SILICON 2SC4204-AA
Q504	TNYJA05001	COMPOUND TRANSISTOR DTC143EKAT146
Q505	TNYJA05001	COMPOUND TRANSISTOR DTC143EKAT146
⚠ Q506	TCB0049080	TRANSISTOR.SILICON 2SC4908
⚠ Q509	TBWT009260	TRANSISTOR.SILICON 2SB926(S.T)-AA
⚠ Q511	0002500480	PHOTO COUPLER TLP621D4(GR)
⚠ Q513	TAWT0984K0	TRANSISTOR.SILICON 2SA984K-AA
Q1001	0002G00490	PHOTO COUPLER GP1S94
SEMICONDUCTORS (CONT.)		
Q1002	0000700320	TRANSISTOR.PHOTO RPT-38PB113
Q1003	TCYT2872S0	TRANSISTOR.SILICON 2SC2872S
Q1004	0000700320	TRANSISTOR.PHOTO RPT-38PB113
Q1006	0002G00490	PHOTO COUPLER GP1S94
Q1014	TN7TJ05001	COMPOUND TRANSISTOR DTC114TKT147
Q4001	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4004	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4005	T6YA1037K0	TRANSISTOR.SILICON 2SA1037KT147
Q4006	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4007	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4009	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4010	T6YA1037K0	TRANSISTOR.SILICON 2SA1037KT147
Q4011	T6YA1037K0	TRANSISTOR.SILICON 2SA1037KT147
Q4012	T6YA1037K0	TRANSISTOR.SILICON 2SA1037KT147
Q4013	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4015	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4016	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4101	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q4503	TAYT0933S0	TRANSISTOR.SILICON 2SA933STP(R.S)
Q4504	TNYJC05001	COMPOUND TRANSISTOR DTC124EKAT146
Q4505	T6YA1037K0	TRANSISTOR.SILICON 2SA1037KT147
Q4802	T6YA1037K0	TRANSISTOR.SILICON 2SA1037KT147
Q5004	TCKT013170	TRANSISTOR.SILICON 2SC1317-T
Q6303	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q6304	T82A037340	TRANSISTOR.SILICON 2SC3734
Q6305	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
Q6306	T8YA2412K0	TRANSISTOR.SILICON 2SC2412KT147
COILS & TRANSFORMERS		
⚠ L501	029X000070	COIL.LINE FILTER SS10V-03330
L504	021W66820K	COIL.CHOKE 82 UH
L505	021W66220M	COIL.CHOKE 22 UH
L701	021673101K	COIL 100 UH
L4001	02167D101K	COIL 100 UH
L4002	021673101K	COIL 100 UH
L4003	02167D101K	COIL 100 UH
L4004	021673101K	COIL 100 UH
L4005	021QA6471K	COIL 470 UH
L4006	021LA6470K	COIL 47 UH
L4008	021LA6560K	COIL 56 UH
L4009	021LA6560K	COIL 56 UH
L4012	021LA6390K	COIL 39 UH
L4013	021LA6330K	COIL 33 UH
L4101	021663101K	COIL 100 UH
L4503	021LA6220K	COIL 22 UH
L4504	021LA6390K	COIL 39 UH
L4507	021LA6100K	COIL 10 UH
L4509	021673101K	COIL 100 UH
L4510	021LA6100K	COIL 10 UH
L4804	021673101K	COIL 100 UH
L5005	021673102K	COIL 1000 UH
L6303	02167D101K	COIL 100 UH
⚠ T501	0481290054	TRANSFORMER.SWITCHING 8129005
T5001	033626010R	COIL.BIAS OSC 3626010
JACK		
J4501	063G100037	SOCKET.21PIN 035 0 9985 05
SWITCHES		
SW601	0504201T31	SWITCH.TACT SKHVBE075B
SW603	0504201T31	SWITCH.TACT SKHVBE075B
SW604	0504201T31	SWITCH.TACT SKHVBE075B
SW605	0504201T31	SWITCH.TACT SKHVBE075B
SW606	0504201T31	SWITCH.TACT SKHVBE075B
SW607	0504201T31	SWITCH.TACT SKHVBE075B
SW651	0504101T36	TACT SWITCH EVQPC005K
SW652	0504101T36	TACT SWITCH EVQPC005K
SW1001	0550322004	SWITCH.LEAF HXW0394-010010
SW6301	0510U21022	SWITCH.SLIDE SSSF11342A
P.C. BOARD ASSEMBLIES		
PCB010	A4B414B01A	PCB ASS'Y VM6114A
PCB270	A4B414B27A	PCB ASS'Y VE6771B
PCB330	A4B406B33A	PCB ASS'Y VE6773A
MISCELLANEOUS		
BT601	1412004008	BATTERY.MANGAN R03(AB)E 20 T
⚠ CD501	1206655806	CORD.AC BUSH E2N 6FEET 06655806
CD601	06CH23041A	CORD.EIS CONNECTOR CH23041A

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		MISCELLANEOUS (CONT.)
CP501	0694430100	CORD.UX CONNECTOR 2-173270-3
CP651	069E230129	CONNECTOR PCB SIDE 8283 0312
CD4102	0694220129	CONNECTOR PCB SIDE 173981-2
CD6002	06CZL05015	RF CABLE PAL FTZ D-2070
CP1001	06977K0580	CONNECTOR PCB SIDE TMC-W20P-A1
CP1002	0697150310	CONNECTOR PCB SIDE TAS-X05X-D1
CP4001	06977G0580	CONNECTOR PCB SIDE TMC-W16P-A1
CP4002	068122070A	CORD.EIS CONNECTOR 8122070A
CP4101	069R740479	CONNECTOR PCB SIDE 52492-0420
CP4102	069R750499	CONNECTOR PCB SIDE 52492-0520
CP4103	06977K0570	CONNECTOR PCB SIDE TMC-W20X-A1
CP4104	06977G0570	CONNECTOR PCB SIDE TMC-W16X-A1
CP4105	069779M010	CONNECTOR PCB SIDE TKC-F09X-L1
CP4106	069R760018	CONNECTOR PCB SIDE 52044-0645
⚠ F501	080PT1R602	FUSE 21801.6
FH501	06710T0006	HOLDER.FUSE EYF-52BC
FH502	06710T0006	HOLDER.FUSE EYF-52BC
OS651	0771000013	REMOTE RECEIVER PNA4612M00YB
TM601	07660AN06C	TRANSMITTER SBER20039C
⚠ TU6001	0162601001	RF UNIT(MD+TU+IF) TMUG3-103A
Y651	096775R703	TUBE FLUORESCENT DISPLAY FY686GA
X1001	100CA01603	CRYSTAL HC-49/U-S 16.0MHZ
X1002	100C32R803	CRYSTAL DSYT-200 32.768KHZ
X4001	100CA4R404	CRYSTAL HC-49/U-S 4.433619MHZ
X4801	100W17R702	CRYSTAL HC-49/U 17734.475KHZ

RESISTOR
RC........CARBON RESISTOR

CAPACITORS
CC........CERAMIC CAPACITOR
CE........ALUMI ELECTROLYTIC CAPACITOR
CP........POLYESTER CAPACITOR
CPP.......POLYPROPYLENE CAPACITOR
CPL.......PLASTIC CAPACITOR
CMP.......METAL POLYESTER CAPACITOR
CMPL......METAL PLASTIC CAPACITOR
CMPP......METAL POLYPROPYLENE CAPACITOR
CST.......STYROL CAPACITOR